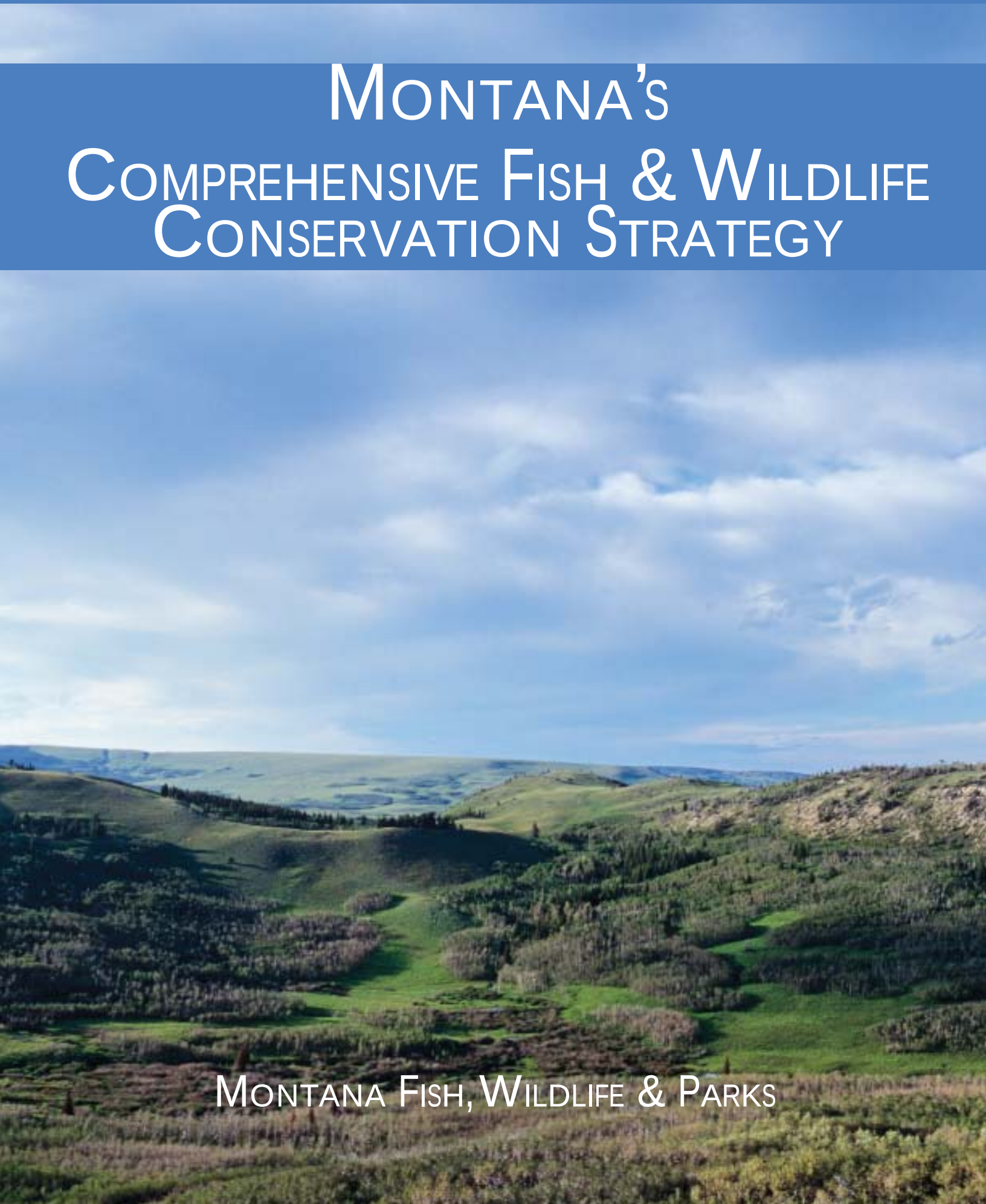
EXECUTIVE SUMMARY 2005

MONTANA'S COMPREHENSIVE FISH & WILDLIFE CONSERVATION STRATEGY



MONTANA FISH, WILDLIFE & PARKS

MONTANA'S COMPREHENSIVE FISH & WILDLIFE CONSERVATION STRATEGY

PUBLISHED BY
MONTANA FISH, WILDLIFE & PARKS

ATTENTION:

This document should be cited as *Montana's Comprehensive Fish and Wildlife Conservation Strategy, Executive Summary, 2005*. Montana Fish, Wildlife & Parks, 1420 East Sixth Avenue, Helena, MT 59620.

Citations, methodology, and details of analysis can be found in the complete document located on the CD attached to the inside back page of this document.

NOTE: This document is the executive summary of the complete Montana Comprehensive Fish and Wildlife Conservation Strategy. The information provided within is intended to summarize information found in the complete strategy, emphasizing greatest conservation needs in Montana. The complete document can be found on the enclosed CD or by visiting the Montana Fish, Wildlife and Parks website at fwp.mt.gov

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Governor's Message

Montana's first Comprehensive Fish and Wildlife Conservation Strategy examines our diverse landscape so rich in fish and wildlife. It documents the wealth of healthy species and habitats in our great state, and points to areas where conservation efforts are needed to ensure we continue to have a healthy ecosystem with fewer threatened and endangered species.

Hunters and anglers have supported conservation of game species since the early 1900s. Now is the time for other conservationists to join in and help secure future funds for Montana-based conservation efforts. In short, all Montanans need to pitch in and work together to ensure the health of all species. This strategy is the first step in that important direction.

A cooperative and comprehensive approach to conservation will ensure that future generations of Montana families have the same quality hunting, fishing and wildlife viewing opportunities that we enjoy today.

Brian Schweitzer
Governor

Foreword

Montana, like other states, is rich in fish and wildlife but unfortunately not in the funds needed to address all species successfully.

Responding to the need for funding, Congress established the State Wildlife Grants (SWG) program in 2001. The funds support conservation projects for species historically overlooked because money's been short. To ensure that funds are used efficiently and effectively, Congress charged each state to develop a comprehensive assessment of its fish and wildlife and the places they inhabit.

This is Montana's contribution to the nationwide effort to take a broad look at America's fish and wildlife. It is our hope that this Comprehensive Fish and Wildlife Conservation Strategy (CFWCS) will bring Montana a step closer to securing long-term federal funding needed to conserve and manage hundreds of species that fall in the conservation gap between the state's major game animals and those that are threatened or endangered.

This document not only identifies Montana's critical wildlife habitats and the animals that need special attention, it aims to keep fish and wildlife management decisions in the hands of Montana citizens by keeping species from becoming threatened or endangered.

FWP hopes this comprehensive assessment will enable Montana to build on past successes and broaden the agency's ability to fulfill its mission to conserve all species.

Jeff Hagener
Director
Montana Fish, Wildlife & Parks

Comprehensive Strategy Goals

This comprehensive conservation strategy embraces all vertebrate species known to exist in Montana including both game and nongame species as well as some invertebrate species (freshwater mussels and crayfish). In the early years of fish and wildlife management, the focus was clearly placed on game animals and their related habits. This was, and continues to be, a result of almost all of the agency's funding being provided by hunters and anglers. Although FWP has no intention of reducing the attention focused on important game species, it is apparent that effective conservation actions directed to particular community types will benefit a variety of game and nongame species. As a result, FWP believes that with this new funding mechanism and conservation strategy in place, managing fish and wildlife more comprehensively is a natural progression in the effective conservation of the remarkable fish and wildlife resources of Montana.

Although game species are included in the strategy, its priority is to describe those species and their related habitats in greatest conservation need. We interpreted "in greatest conservation need" to mean focus areas, community types and species that are significantly degraded or declining, federally listed, or where important distribution and occurrence information to assess the status of individuals and/or groups of species is lacking. Because management of game species has been largely successful over the last 100 years, most have populations that are stable or increasing and fewer were identified as in greatest conservation need (49 nongame, 11 game).

The methods and databases developed as part of this planning process are powerful tools that could be used in the future to help integrate other fish and wildlife management priorities as they are established. For this particular iteration of the strategy, the following goals were developed.

- Identify all of Montana's fish and wildlife and related habitats in greatest need of conservation and meet all 8 requirements of WCRP and SWG
- Identify management strategies to conserve fish and wildlife and related habitats in greatest need
- Work independently and in partnership to conserve, enhance and protect Montana's diverse fish and wildlife resources, and address each species equitably regardless of classification as game or nongame, rare or "at risk"
- Improve FWP's ability to address present and future funding challenges and opportunities
- Integrate monitoring and management of game and nongame fish and wildlife species

The Four Components of Montana's Strategy

Montana's Comprehensive Fish and Wildlife Conservation Strategy is organized into four components. Component I, focus areas, guides attention to specific geographical areas of Montana that are in greatest need of conservation. Component II, community types, identifies habitats along with their related fish and wildlife that are in greatest need of conservation throughout Montana regardless of location. Often,

fish and wildlife within a community type face similar conservation concerns. Addressing these concerns using community level conservation allows many species to comprehensively benefit from conservation strategies. However, some species populations have declined so far, or are so specialized that conservation strategies aimed at focus areas or community types might not be effective. Therefore, Component III, identifies the 60 fish and wildlife species in greatest need of conservation. The conservation concerns for these species should be addressed specifically whether through broad or fine scale actions. Finally, there are many species and groups of species that we do not have available adequate occurrence data for in order to determine their status. Component IV provides a list of these species and groups of species that are in greatest need of inventory.

Component I: Geographic Focus Areas in the landscape that contain significant fish and wildlife communities (species and their associated habitats) that are identified as being in greatest need of conservation.

> This is a strategy to focus resources and efforts toward geographical areas where they can benefit the largest number of species and communities in need of conservation

Component II: Fish and Wildlife Community Types that are in the greatest need of conservation.

> This is a high leverage strategy to address the conservation concerns of whole ecological communities or species groupings. Implementing conservation strategies at this level will comprehensively benefit many fish and wildlife species.

Component III: Fish and Wildlife Species that are in the greatest need of conservation.

> Species whose needs must be specifically addressed, whether through focus areas, community types or directly or indirectly

Component IV: Species and groups of species to be targeted for inventory.

> Over time, this strategy will allow us to collect data 1) for species or species groups we do not have sufficient information to determine their level of conservation need, or 2) for species that are important or indicator species for health of certain communities, or 3) for species used as measures of success in a comprehensive approach to fish and wildlife management.

Categorizing the Levels of Conservation Need

Within each component, focus areas, community types, and species were prioritized into three or four tiers, based on their level of conservation need. Likewise, all species were prioritized for inventory needs using similar definitions. Please review the methods section of the strategy to understand how tiers were calculated for focus areas, communities, species, and inventory needs.

Tier I: Greatest conservation need. Montana Fish, Wildlife & Parks has a clear obligation to use its resources to implement conservation actions that provide direct benefit to these species, communities and focus areas.

Tier II: Moderate conservation need. Montana Fish, Wildlife & Parks could use its resources to implement conservation actions that provide direct benefit to these species, communities and focus areas.

Tier III: Lower conservation need. Although important to Montana' wildlife diversity, these focus areas, communities and species are either abundant/widespread or are believed to have adequate conservation already in place.

Tier IV: Species that are non-native, incidental or on the periphery of their range and are either expanding or very common in adjacent states.

How this Strategy Works

When fully implemented, this strategy is intended to be dynamic and is based on the concept that fine-scale information for any of Montana' species will be used to continually refine and adjust the classification for that species when appropriate. This will be accomplished using the inventory component of the strategy. In turn, modifications to the list of species in greatest need of conservation should help re-direct priorities in terms of the most at risk community types. This information will then be used to direct our attention to new geographical areas of Montana and help focus the delivery of the appropriate conservation efforts that help address the most critical, where possible. We have made every effort to use existing management plans to describe the conservation concerns and strategies for focus areas, community types and species. In this way the strategy attempts to tie together many different plans at different levels in order to facilitate collaboration.

Implementing Montana's Comprehensive Conservation Strategy

Each of the focus areas, community types, species and inventory needs along with their conservation concerns and strategies are the conservation priorities for Montana. No conservation strategy identified in this document was singled out as more or less important than any other because successful conservation of these species and habitats in greatest need will require addressing all of these concerns over time. In addition singling out certain strategies at the strategic level reduces the flexibility of FWP and our partners to take advantage of conservation opportunities as they occur.

Several challenges must be met in order to successfully implement Montana' strategy. First, this document was developed at the strategic level following congressional guidance. As a result, the conservation concerns and strategies that have been identified are intentionally broad in scope and will need to be further developed at the operational level as the strategy is implemented. Second, SWG funding is allocated annually and the amounts have so far been insufficient to fully implement the scope of this strategy. In addition, the unstable nature of funding serves as a roadblock that could prevent FWP and its partners from committing to long term projects. We anticipate that this funding status will remain the same in the near future.

These challenges will be met in several ways. Following the submission of Montana's strategy to the USFWS, FWP and our partners will develop an Action Plan within the year that is operational in nature and that targets the Tier I focus areas, community types, species, and inventory needs that offer the greatest opportunity for leveraging our collective resources. These targets will be selected while considering the immediacy of conservation need and the limited and varying nature of SWG funding. The conservation targets that are selected will have an operational plan developed that details specific priorities, objectives, actions and responsibilities of FWP and our partners that will be accomplished prior to the next scheduled revision of the strategy. In this way, FWP and our partners can more realistically narrow the vast conservation needs of Montana's habitats and species to more accurately reflect the available levels of SWG funding and ongoing conservation efforts that can be leveraged.

MONTANA'S FOCUS AREAS
OF GREATEST CONSERVATION NEED

Montana's Focus Areas
of Greatest Conservation Need

Montana is divided into four ecotypes; Intermountain Grassland, Montane Forest, Plains Grassland and Forest, and Shrub Grassland. Within ecotypes, focus areas have been identified as geographic starting points for FWP and our partners to focus combined efforts on conserving Montana's community types and species in greatest need of conservation.

Ecotypes

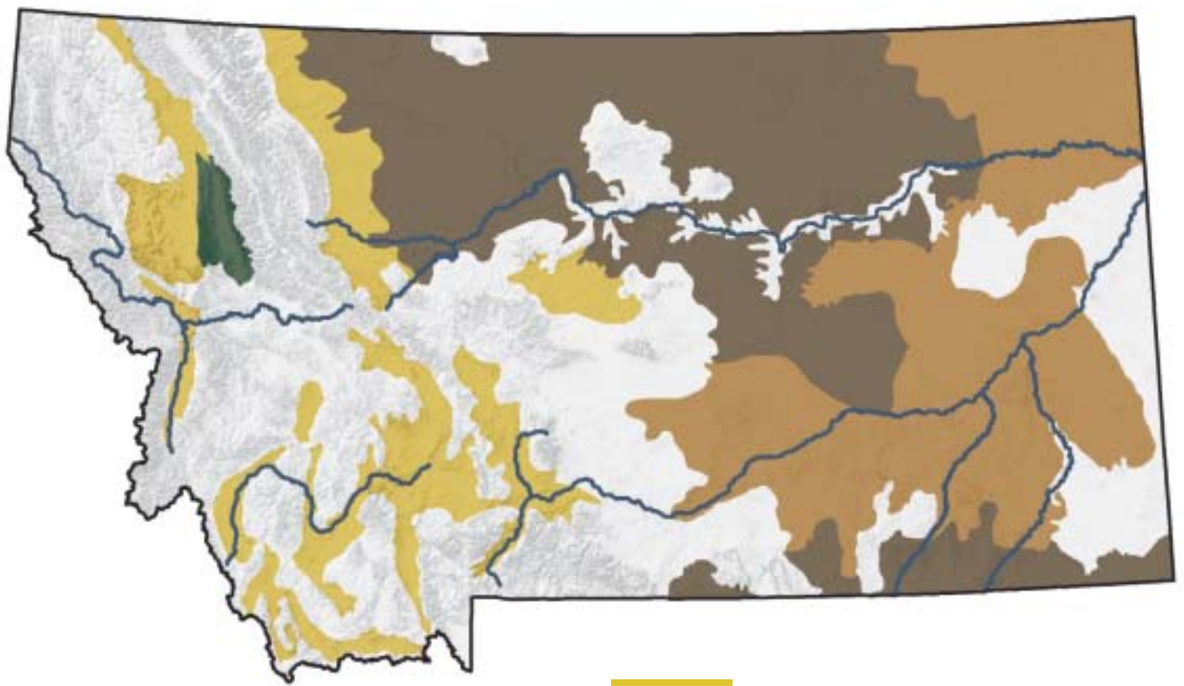
Intermountain Grassland

The intermountain grassland ecotype represents the broad sweeping valleys of western Montana cradled by the peaks of the Rocky Mountains. The mosaic of mostly privately owned land extends from the Flathead River Valley in the north to the Centennial Valley in the south to the Little Belt Foothills in the east. These valleys, formed mainly by glaciers, represent some of Montana's most diverse habitat. They are often bisected by meandering river corridors that sustain core riparian and wetland areas and are sometimes dotted by glacial lakes. This ecosystem harbors more diverse communities of wildlife species than any other in Montana. The intermountain grassland ecotype contains some of the greatest concentrations of human population in Montana including Kalispell, Missoula, Helena, Bozeman and their surrounding areas. Addressing the challenges that accompany this interface between human settlement and fish and wildlife and their habitats will be critical to the conservation of this ecotype.

Montane Forest

The montane forest ecotype represents the mountains of Montana that have been formed by tectonic uplift and glacial erosion. These high elevation areas occur along the western third of the state and encompass mountains from their base to their summit with elevations increasing from the north where the Kootenai River flows into Idaho (1,800 feet) southward to the snow capped peaks in the Beartooth Range (12,800 feet) adjacent to Yellowstone National Park. Vast coniferous forest complexes of larch, fir, hemlock, pine, and spruce trees characterize these areas that protect the headwater mountain streams of Montana's rivers. Much of this ecosystem is in public ownership through the United States Forest Service (USFS). Collaboration with the USFS will be critical to the conservation of this ecotype.

Tier One Terrestrial & Aquatic Focus Areas within Ecotypes



Plains Grassland and Forest

Montana's eastern grasslands are part of the Great Plains of North America that stretches from Canada south to Mexico and constitute about 50 percent of Montana, with about three-quarters of this being privately owned. The landscape is typically high, rolling land, with some scattered hills and wide river valleys including those of the warm water sections of the Yellowstone and Missouri rivers, which represent the most diverse communities of fish in Montana. The plains are characterized by a limited number of dominant grasses and xeric shrubs. This ecotype generally receives less than 15 inches of rain a year and endures days of winds in the blistering heat of summer and the blizzards and cold of winter. Woody draws, considered "ribbons of life", dot the landscape and render protection as an oasis for wildlife. In the southeast and north, are the unique badlands or "breaks" sculpted by wind and water.

The prairie forests that occur as isolated mountain chains staggered just east from the Rocky Mountains are somewhat higher in elevation than the surrounding plains grassland, creating precipitation conditions favoring the establishment of a closed canopy forest. Great Plains ponderosa pine is the sole conifer forming the plains forests in combination with various hardwoods. Although these forests are not islands in the true sense, they are a unique part of the plains landscape.

Shrub Grassland

The shrub grassland ecotype occurs in widely separated segments across most of the eastern half of the state in high-elevation valleys and along non-forested slopes. The junipers and sagebrushes that characterize these generally dry slopes only make up 8 percent of Montana's land. They are interspersed with low cover grasslands and offer a unique transitional area habitat that supports many of Montana's species of greatest conservation need. Over half of this limited ecotype is privately owned. These benches have traditionally provided grazing lands but have in recent years become prized for residential development as they provide accessible sites with sweeping views. Working with landowners will be critical for the conservation of this ecotype.

Terrestrial Focus Areas

Bitterroot/Frenchtown Valley

406,859 acres

The Bitterroot/Frenchtown Valley is dominated by the jagged peaks of the Bitterroot Range to the west and the lower Sapphire Mountains to the east. The valleys are arid, flat or gently rolling landscapes. While these valleys support many habitats, from grassland and riparian to forests and sagebrush, most of the area is now in agricultural production. In the valley bottoms, the cottonwood riparian habitats are productive wildlife habitats and are home to a wide variety of birds, mammals, reptiles and amphibians. These valleys are also some of the most quickly growing areas in the state, with residential development booming.

Tier One Species

Amphibians
Coeur d'Alene Salamander
Western Toad
Northern Leopard Frog

Birds
Common Loon
Trumpeter Swan
Harlequin Duck
Bald Eagle
Long-billed Curlew
Black Tern
Flammulated Owl
Black-backed Woodpecker
Olive-sided Flycatcher

Mammals
Townsend's Big-eared Bat
Northern Bog Lemming
Gray Wolf
Grizzly Bear

Tier One Community Types

Grassland Complexes	25%
Sagebrush & Salt Flats	5%
Riparian & Wetland	4%

Conservation

Concerns	Strategies
Habitat loss, degradation, and fragmentation, especially as a result of human population growth and development of transportation infrastructure.	**Support strategic conservation easements by** conservation organizations & public agencies; Identify and prioritize key wildlife linkage areas, and work with other state and federal agencies, conservation groups, and landowners to restore wildlife connectivity; **Support state/federal tax incentives that** discourage habitat fragmentation; **Promote further development of county** ordinances that help guide future residential and commercial development.
Invasive and exotic plant and animal species.	**Participate in partnerships to develop and** implement weed control strategies as well as invasive species management.
Range and forest management practices.	**Support government & private conservation** activities that encourage and support sustainable land management practices.
Streamside residential development.	**Develop statewide riparian best management** principles.

Intermountain/Foothill Grassland

Terrestrial Focus Areas

Central MT Broad Valleys

2,604,058 acres

These central valleys include the areas from Three Forks, where the Missouri River begins, north through the Helena Valley and White Sulfur Springs, generally east of the Belt Mountains. The valleys are situated among the foothills of the Rocky Mountains where precipitation is reduced by the rain shadow effect. Low and moderate cover grasslands dominate the valley floors and the dry environment highlights the importance of the riparian areas along the Missouri, Smith and other rivers and streams. Higher elevations capture enough precipitation to support fir, spruce and pine forests.

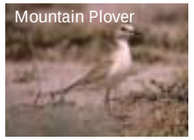
Tier One Community Types

Grassland Complexes	48%
Sagebrush & Salt Flats	8%
Riparian & Wetland	5%

Conservation

Concerns	Strategies
Habitat loss, degradation, and fragmentation, especially as a result of human population growth.	**Support strategic conservation easements by** conservation organizations & public agencies; **Support state/federal tax incentives that** discourage habitat fragmentation; **Promote further development of county** ordinances that help guide future residential and commercial development; **Identify and prioritize key wildlife linkage** areas, and work with other state and federal agencies, conservation groups and landowners to restore wildlife connectivity.
Invasive and exotic plant species.	**Participate in partnerships to develop and** implement weed control strategies.
Range or forest management practices.	**Support government and private conservation** activities that encourage and support sustainable land management practices (example: rest and rotation schedules).
Streamside residential development.	**Develop statewide riparian best** management principles.

Tier One Species



Amphibians
Western Toad
Northern Leopard Frog

Birds
Common Loon
Bald Eagle
Greater Sage-Grouse
Mountain Plover
Long-billed Curlew
Black Tern
Burrowing Owl

Mammals
Townsend's Big-eared Bat
Pallid Bat
Black-tailed Prairie Dog
Grizzly Bear
Canada Lynx

Terrestrial Focus Areas

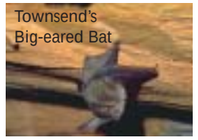
Deerlodge Valley

175,260 acres

One of several broad, intermountain valleys located in southwestern Montana, the north-flowing Clark Fork River bisects the Deerlodge Valley along an east-west axis. Cattle ranching and hay production

are the chief agricultural activities. Native bunchgrass occurs on the valley foothills, which provide important elk and deer winter range and supports other diverse non-game wildlife.

Tier One Species



Amphibians
Western Toad
Northern Leopard Frog

Birds
Common Loon
Trumpeter Swan
Harlequin Duck
Bald Eagle
Long-billed Curlew
Black Tern

Mammals
Townsend's Big-eared Bat
Canada Lynx

Tier One Community Types

Grassland Complexes	59%
Riparian & Wetland	6%
Mixed Shrub/Grass Associations	5%
Sagebrush & Salt Flats	5%

Conservation

Concerns	Strategies
Habitat loss, degradation & fragmentation, especially as a result of human population growth.	**Support conservation easements by** conservation organizations or public agencies; **Support state/federal tax incentives that** discourage habitat fragmentation; **Promote further development of** county ordinances that help plan for and manage development.
Invasive and exotic plant species.	**Participate in partnerships to develop** and implement weed control strategies.
Range or forest management practices.	**Support government and private** conservation activities that encourage and support sustainable land management practices (example: rest and rotation schedules).
Streamside residential development.	**Develop statewide riparian best** management principles.

Terrestrial Focus Areas

Flathead River Valley

1,586,787 acres

The glaciated Flathead Valley of northwestern Montana lies amongst majestic mountain ranges and cradles the Flathead River. The valley supports diverse wetland and aquatic communities including glacial lakes, ponds, spring creeks, riparian swamps, cottonwood forests, oxbow lakes, and Flathead Lake, the nation's largest

natural freshwater lake west of the Mississippi. The northern and southern reaches of the valley still support intact palouse prairie habitats interspersed with wetlands and forest. The rich resources of the valley floor—the riparian/wetlands, grasslands, and foothills—are primarily in private ownership, and are under extreme development pressure.

Tier One Community Types

Grassland Complexes	16%
Sagebrush & Salt Flats	7%
Riparian & Wetland	3%

Conservation

Concerns	Strategies
Habitat fragmentation, especially as a result of human population growth/ development and expansion of the transportation network.	**Support conservation easements and** other methods that help protect critical habitat on private lands, including corporate forested lands; **Work with Montana Department of** Transportation and Federal Highway Commission to effectively mitigate impacts of highway construction; **Identify and prioritize key wildlife** linkage areas, and work with cooperators and landowners to restore wildlife connectivity.
Range or forest management practices.	**Support cooperative activities that** encourage and support sustainable land management practices (example: rest and rotation schedules).
Invasive or exotic plant species.	**Support efforts to eradicate exotic or** invasive plant species.
Altered fire regimes.	**Work with cooperators to mimic** natural fire regimes.

Tier One Species

Amphibians
Western Toad
Northern Leopard Frog

Birds
Common Loon
Trumpeter Swan
Bald Eagle
Columbia Sharp-tailed Grouse
Long-billed Curlew
Black Tern
Flammulated Owl
Black-backed Woodpecker
Olive-sided Flycatcher

Mammals
Townsend's Big-eared Bat
Northern Bog Lemming
Grizzly Bear
Gray Wolf
Canada Lynx

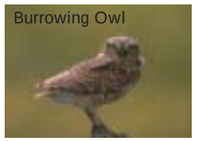
Terrestrial Focus Areas

Little Belt Foothills

839,541 acres

The Little Belt Foothills cover the Judith Basin, a large grassland rimmed by the Little Belt, Highwood, Moccasin and Big Snowy mountains. The Judith River, tributary to the Missouri River, is the basin's main drainage. Large, flat benches that give soaring views define the high Little Belt foothills. Long, sprawling terraces dominate the lower elevations. While about 30 percent of the benches and terraces in the Judith Basin are farmed, the remaining land consists of bunchgrass and sagebrush grasslands.

Tier One Species



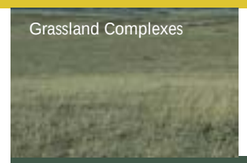
Amphibians
Western Toad
Northern Leopard Frog

Reptiles
Western Hog-nosed Snake
Milksnake

Birds
Bald Eagle
Greater Sage-Grouse
Mountain Plover
Long-billed Curlew
Black Tern
Burrowing Owl

Mammals
Townsend's Big-eared Bat
Black-tailed Prairie Dog
Black-footed Ferret

Tier One Community Types



Grassland Complexes	31%
Riparian & Wetland	7%
Sagebrush & Salt Flats	5%

Conservation

Concerns	Strategies
Range or forest management practices.	**Support government and private conservation** activities that encourage and support sustainable land management practices (example: rest and rotation schedules).
Streamside residential development.	**Develop statewide riparian best management** principles.
Fragmentation and loss of native habitat as a result of conversion to cropland and human population growth development.	**Develop government & private conservation** programs/activities that encourage and support private land stewardship; **Identify and prioritize key wildlife** linkage areas, and work with cooperators and landowners to restore wildlife connectivity.
Altered natural fire regime.	**Work with public and private efforts to** restore natural fire regime to area.
Invasive or exotic plant species.	**Develop cooperative efforts to reduce** the abundance of invasive or exotic species.

Terrestrial Focus Areas

Northern Tobacco Root Mountains & Foothills

224,989 acres

The rugged peaks of the Tobacco Root Mountains overlook this area with their abundant high mountain lakes providing excellent fishing opportunities. These mountains have seen extensive historical mining activity resulting in numerous roads. The foothills provide important elk and mule deer winter range and are dominated by sagebrush/grassland that has seen conversion from spraying and burning of sagebrush. There are productive cottonwood riparian habitats supporting an abundance of wildlife species along the Jefferson River. This valley bottom is home to extensive agricultural production of cattle and alfalfa with little or no grain production.

Tier One Community Types

Grassland Complexes	48%
Sagebrush & Salt Flats	8%
Riparian & Wetland	5%

Conservation

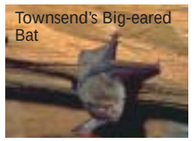
Concerns	Strategies
Habitat loss, degradation & fragmentation, especially as a result of population growth/development.	**Support strategic conservation easements,** protection by conservation organizations or public agencies by providing advice and technical assistance; **Promote and further develop county** ordinances to manage development; **Support state/federal tax incentives that** discourage habitat fragmentation; **Identify and prioritize key wildlife** linkage areas, and work with other state and federal agencies, conservation groups, and landowners to restore wildlife connectivity.
Invasive or exotic plant species.	**Participate in partnerships to develop** and implement weed control strategies.
Range or forest management practices.	**Support government and private conservation** activities that encourage and support sustainable land management practices.
Streamside residential development.	**Develop statewide riparian best** management principles

Tier One Species

Amphibians
Western Toad

Birds
Flammulated Owl
Bald Eagle

Mammals
Townsend's Big-eared Bat
Grizzly Bear
Canada Lynx



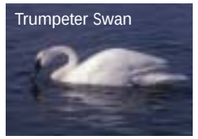
Terrestrial Focus Areas

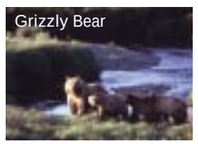
Rocky Mountain Front Foothills

2,018,789 acres

The Rocky Mountain Front from Alberta, Canada, south through Montana, marks the easternmost edge of the Bob Marshall Wilderness where thrust-faulted mountains give way to rolling foothills and Great Plains grasslands. This variable landscape still offers glimpses of grizzly bears moving from high-mountain fir and spruce forests to native prairie grasslands dotted with pothole marshes where migrating birds stage season after season. With the exception of bison, all of the native mammals that inhabited this land when Lewis and Clark passed through still survive here.

Tier One Species





Amphibians
Western Toad
Northern Leopard Frog

Reptiles
Western Hog-nosed Snake

Birds
Common Loon
Trumpeter Swan
Harlequin Duck
Bald Eagle
Piping Plover
Mountain Plover
Long-billed Curlew
Black Tern
Flammulated Owl
Burrowing Owl

Mammals
Townsend's Big-eared Bat
Black-tailed Prairie Dog
Northern Bog Lemming
Grizzly Bear
Canada Lynx

Tier One Community Types

Grassland Complexes	60%
Riparian & Wetland	6%
Mixed Broadleaf Forest	2%

Conservation

Concerns

Habitat fragmentation as a result of conversion of natural lands to agriculture and human population growth/development and energy exploration and development activities.

Invasive or exotic plant species.

Strategies

Develop policy-based approaches that encourage the conservation of natural communities rather than support their conversion;
Increase efforts to maintain ecological features (e.g., black-tailed prairie dog colonies) or processes (e.g., fire) on public lands as they disappear from private lands;
Promote further development of county ordinances that help guide future residential and commercial development;
Identify and prioritize key wildlife linkage areas, and work with other state and federal agencies, conservation groups, and landowners to restore wildlife connectivity.

Support cooperative efforts to eradicate or reduce the abundance of exotic or invasive plant species.

Intermountain/Foothill Grassland

Terrestrial Focus Areas

South Elkhorn Mountains

171,059 acres

The South Elkhorn Mountains are a diverse landscape with vegetation and topography more typical of Central Montana than the Intermountain Western portion of Montana. Sagebrush grasslands and broken and rough terrain are found through much of this area although much of the southern portion has been converted to dry-land grain and Conservation Reserve Program grasslands. In the northern portion of this area, as the Elkhorn Mountains are approached, the common geologic formations are limestone ridges and outcrops. These ridges provide the environment for abundant stands of mountain mahogany and other xeric shrub types.

Tier One Community Types

Grassland Complexes	43%
Sagebrush & Salt Flats	22%

Conservation

Concerns

Habitat loss, degradation, and fragmentation, especially as a result of human population growth

Range or forest management practices.

Streamside residential development

Invasive or exotic plant species

Strategies

Support strategic conservation easements/protection by conservation organizations or public agencies by providing advice and technical assistance;
Support state/federal tax incentives that discourage habitat fragmentation;
Promote and further develop county ordinances that help plan for and manage development;
Support state/federal tax incentives that discourage habitat fragmentation.

Support government and private conservation activities that encourage and support sustainable land management practices (example: rest and rotation schedules).

Develop statewide riparian best management principles.

Participate in partnerships to develop and implement weed control strategies.

Tier One Species

Amphibians
Northern Leopard Frog

Birds
Bald Eagle
Black-backed Woodpecker

Mammals
Townsend's Big-eared Bat
Pallid Bat
Gray Wolf
Canada Lynx

Intermountain/Foothill Grassland

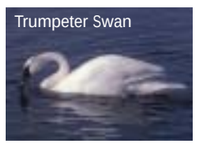
Terrestrial Focus Areas

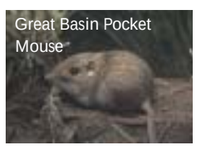
Southwest Montana
Intermountain Basins & Valleys

2,077,477 acres

The area consists of valleys located between mountain ranges, and typically follows major stream courses. Many small tributary mountain streams flow down the hillsides of these valleys and support wetlands and rivers such as the Red Rock, Madison, Jefferson and Big Hole rivers, and Red Rock Lakes. The vegetation is a mix of sagebrush grassland on the valley floor and riparian species like sedges and willows are common in the wet valley bottoms. Coniferous forest and aspen stands in the wetter microsites dominate the higher elevations. These intermountain basins and valleys are under the imminent threat of habitat fragmentation from residential development.

Tier One Species



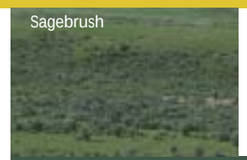


Amphibians
Western Toad

Birds
Common Loon
Trumpeter Swan
Bald Eagle
Greater Sage-Grouse
Long-billed Curlew
Flammulated Owl

Mammals
Townsend's Big-eared Bat
Pygmy Rabbit
Great Basin Pocket Mouse
Gray Wolf
Grizzly Bear
Canada Lynx

Tier One Community Types



Grassland Complexes	37%
Sagebrush & Salt Flats	30%
Riparian & Wetland	7%

Conservation

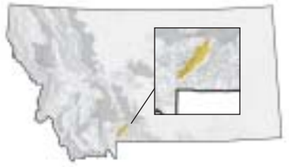
Concerns	Strategies
Habitat fragmentation and loss of connectivity as a result of human population growth/development.	**Identify and prioritize key wildlife linkage** areas and work with cooperators to restore wildlife connectivity; **Support strategic conservation** easements/protection by cooperators to provide advice/technical assistance; **Participate in cooperative programs/** activities that encourage and support private land stewardship; **Manage for the sustainable use of** recreational vehicles on public lands.
Invasive or exotic plant species.	**Participate in partnerships to develop** and implement weed control strategies.
Range or forest management practices.	**Support government and private conservation** activities that encourage and support sustainable land management practices (example: rest and rotation schedules).
Streamside residential development.	**Develop statewide riparian best** management principles.

Intermountain/Foothill Grassland

Terrestrial Focus Areas

Upper Yellowstone Valley

172,039 acres



The Upper Yellowstone River Valley, south of Livingston, is better known to many as Paradise Valley. Bracketed by the Absaroka-Beartooth Wilderness on the east and the Gallatin Range on the west, the valley's grassland habitats are bisected by the Yellowstone River and its riparian areas and cottonwood stands. Cradled within the Gallatin and Absaroka ranges are low-elevation meadows, limited juniper stands mixed with grasslands and sagebrush. Higher up are forests of aspen, pine, spruce, subalpine fir, and whitebark pine.

Tier One Community Types

Grassland Complexes	42%
Sagebrush & Salt Flats	5%
Riparian & Wetland	5%
Mixed Broadleaf Forest	2%

Conservation

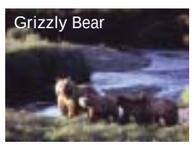
Concerns	Strategies
Recreational infrastructure development, especially road network development.	**Work with Montana Department of** Transportation and Federal Highway Commission to effectively mitigate impacts of highway construction.
Habitat loss and fragmentation, especially as a result of human population growth/development.	**Support strategic conservation** easements/protection by conservation organizations or public agencies; **Support state/federal tax incentives that** discourage habitat fragmentation; **Promote and further develop county ordinances** that help plan for and manage development.
Invasive or exotic plant species.	**Support efforts to eradicate exotic or** invasive plant species.
Range or forest management practices.	**Support government and private** conservation activities that encourage and support sustainable land management practices (example: rest and rotation schedules).
Streamside residential development.	**Develop statewide riparian best** management principles.

Tier One Species

Amphibians
Western Toad
Northern Leopard Frog

Birds
Trumpeter Swan
Bald Eagle
Long-billed Curlew
Black-backed Woodpecker

Mammals
Gray Wolf
Grizzly Bear
Canada Lynx



Aquatic Focus Areas

Big Hole River

153 river miles

Originally named the Wisdom River by Meriwether Lewis, the Big Hole River and its tributaries start along the border of Montana and Idaho. Surrounded by hay meadows, the upper Big Hole separates the Bitterroot Range on the west from the Pioneer Mountains to the east. The middle section of the river runs through a length of gorge and then glides out through hay meadows, where it teams up with the Beaverhead River to create the Jefferson. It is one of the few places in the lower 48 where fluvial Arctic Grayling still persist.

Tier One Species

Invertebrates

Western Pearlshell

Fish

Westslope Cutthroat Trout
Lake Trout (native lakes)
Arctic Grayling
Burbot

Conservation: Concerns

Diversion of water for irrigation ditches and livestock watering.

Entrainment of juvenile and adult fishes by irrigation diversion or other water intakes.

Riparian vegetation effected by range and forest management practices and streamside residential development (such activities destabilize streambanks, increase sediment inputs, reduced shading, and remove woody debris).

Culverts, dams, irrigation diversions, and other instream barriers that fully or partially impede fish movement and reduce connectivity of habitat.

Modification and degradation of stream channels caused by various construction or land management practices.

Alterations of the quantity or timing of stream flows, causing dewatering or unnatural flow fluctuations that diminish the quantity or quality of essential habitats.

Invasive or exotic plant species.

Strategies

Increase installation of stockwater wells in place of irrigation ditches.

Screen or modify irrigation diversions or other water intakes in a manner that prevents entrainment of fishes.

Support government and private conservation activities that encourage and support sustainable land management practices in riparian areas;
Develop statewide riparian best management principles.

Remove or modify barriers in a manner that restores fish passage.

Restore stream channels, streambanks and riparian areas to a condition that simulates their natural form and function.

Implement various water conservation or flow management practices that restore essential habitats, simulate the natural hydrograph and also protect instream flow.

Participate in partnerships to develop and implement weed control strategies as well as invasive species management

Intermountain/Foothill Grassland

Aquatic Focus Areas

Bitterroot River

84 river miles

This river originates in the Anaconda-Pintlar Wilderness and the Bitterroot Mountains in Montana. As the main tributaries flow together near Conner, Montana, it continues north along Highway 93 for 85 miles where it empties into the Clark Fork River near Missoula. To the west, is the glacial Bitterroot Range, and to the east rises the smoother and drier Sapphire Mountains. The river is characterized by constantly shifting stream channels among extensive cottonwood and ponderosa pine bottomland. Adjacent to the Bitterroot River is "Travelers' Rest" which marks the location of a centuries-old Native American campsite that Lewis and Clark's used in 1805 and 1806.

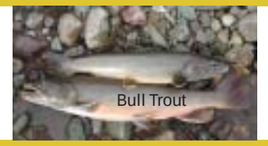
Tier One Species

Invertebrates

Western Pearlshell

Fish

Westslope Cutthroat Trout
Bull Trout



Conservation: Concerns

Valley fragmentation as a result of human population growth.

Presence of non-native aquatic species including warmwater fishes, bullfrogs, crayfish, and milfoil.

Water quality problems due to municipal discharge, irrigation return water, and other sources.

Culverts, dams, irrigation diversions, and other instream barriers that fully or partially impede fish movement and reduce connectivity of habitat.

Entrainment of juvenile and adult fishes by irrigation diversions or other water intakes.

Modification and degradation of stream channels caused by various construction or land management practices.

Riparian vegetation effected by range and forest management practices and streamside residential development (such activities destabilize streambanks, increase sediment inputs, reduced shading, and remove woody debris).

Strategies

Pursue conservation easements within the valley.

Control exotic species and promote natural habitats that support native species but not exotic species.

Work with municipal government and private landowners to reduce point source pollutants.

Remove or modify barriers in a manner that restores beneficial fish passage.

Screen or modify irrigation diversions or other water intakes in a manner that prevents entrainment of fishes.

Restore stream channels or streambanks to a condition that simulates their natural form and function.

Support government and private conservation activities that encourage and support sustainable land management practices in riparian areas;
Modify riparian management practices such that riparian vegetation is allowed to recover;
Develop statewide riparian best management principles.

Aquatic Focus Areas

Blackfoot River

127 river miles

The Blackfoot River begins at the junction of Beartrap and Anaconda Creeks near the Continental Divide and flows west 132 miles to its mouth at Bonner, Montana. Near its headwaters, the Blackfoot River drops through glaciated high-alpine meadows and runs between steep, forested slopes. For the last 52 miles, the Blackfoot levels out and moves through open ranch and timbered areas until it meets the Clark Fork River near Bonner. A free-flowing river, the Blackfoot is affected by soon to be removed Milltown Dam, which has blocked fish passage on the Clark Fork River since 1907.

Tier One Species


Western Pearlshell

Invertebrates

Western Pearlshell

Fish

Westslope Cutthroat Trout
Bull Trout


Bull Trout

Conservation: Concerns

Culverts, dams, irrigation diversions, and other instream barriers that fully or partially impede fish movement and reduce connectivity of habitat.

Modification and degradation of stream channels caused by various construction or land management practices.

Riparian vegetation effected by range and forest management practices and streamside residential development (such activities destabilize streambanks, increase sediment inputs, reduced shading, and remove woody debris).

Entrainment of juvenile and adult fishes by irrigation diversions or other water intakes.

Unnatural hydrograph and water temperatures associated with the presence and operations of large dams, as well as blockage of migratory corridors (These alterations of the quantity or timing of stream flows cause unnatural flow fluctuations that diminish the quantity or quality of essential habitats.

Water chemistry problems that arise due to hard rock mines in headwaters.

Strategies

Remove or modify barriers in a manner that restores fish passage for fluvial native fish, including the Milltown Dam.

Restore stream channels or streambanks to a condition that simulates their natural form and function.

Support government and private conservation activities that encourage and support sustainable land management practices in riparian areas;
Modify riparian management practices such that riparian vegetation is allowed to recover;
Develop statewide riparian best management principles.

Screen or modify irrigation diversions or other water intakes in a manner that prevents entrainment of fishes.

Implement various water conservation or flow management practices that restore essential habitats, simulate the natural hydrograph and also protect instream flows.

Implement a comprehensive mine cleanup in the headwaters of the Blackfoot River upstream of Lincoln, Montana.

Intermountain/Foothill Grassland

Aquatic Focus Areas

Jefferson River

77 river miles

Lewis and Clark named this river after President Thomas Jefferson because it carried the greatest volume of water at that time compared to the near by Madison and Gallatin rivers. The Jefferson River begins where the Big Hole and Beaverhead intersect and flows north through cattle country, limestone cliffs, and into the cottonwood bottoms near Three Forks, where it meets the Madison and Gallatin rivers to form the Missouri River. It is now one of the most heavily impacted rivers in Montana by irrigation and drought.

Tier One Species


Arctic Grayling

Invertebrates

Western Pearlshell

Fish

Westslope Cutthroat Trout
Arctic Grayling
Burbot


Burbot

Conservation: Concerns

Culverts, dams, irrigation diversions, and other instream barriers that fully or partially impede fish movement and reduce habitat connectivity.

Modification and degradation of stream channels caused by various construction or land management practices.

Riparian vegetation effected by range and forest management practices and streamside residential development (such activities destabilize streambanks, increase sediment inputs, reduced shading, and remove woody debris).

Entrainment of juvenile and adult fishes by irrigation diversions or other water intakes.

Alterations of the quantity or timing of stream flows causing dewatering, temperature change or unnatural flow fluctuations that diminish the quantity or quality of essential habitats.

Strategies

Remove or modify barriers in a manner that restores fish passage.

Restore stream channels or streambanks to a condition that simulates their natural form and function.

Support government and private conservation activities that encourage and support sustainable land management practices in riparian areas;
Modify riparian management practices such that riparian vegetation is allowed to recover;
Develop statewide riparian best management principles.

Screen or modify irrigation diversions or other water intakes in a manner that prevents entrainment of fishes.

Implement various water conservation or flow management practices that restore essential habitats, help sustain lower temperatures, and simulate the natural hydrograph as well as protect instream flows.

Intermountain/Foothill Grassland

Focus Areas

Upper Yellowstone River & Tributaries

272 river miles

The Yellowstone River originates in Wyoming and flows through Yellowstone National Park before entering Montana. The river continues in a northeasterly direction from Livingston and confluences with the Shields River, whose origination is the Crazy Mountains. The Yellowstone River then flows through eastern Montana until in eventually meets up with the Missouri River just across the North Dakota border. The river has survived as one of the last large, free-flowing rivers in the continental United States. Lack of impoundments allows spring peak flows and fall & winter low flows to influence a unique and dynamic community through cottonwood-willow bottomlands and low cover grasslands.

Tier One Species

Fish
Yellowstone Cutthroat Trout
Burbot
Sauger

Conservation: Concerns

Dewatering as a result of water diversion.

Water chemistry problems due to irrigation return water and the discharge of wastewater from coal bed methane operations, and other sources.

Riprap and other streambank stabilization work.

Invasive non-native fish species.

Entrainment of juvenile and adult fishes by irrigation diversions or other water intakes.

Riparian vegetation effected by range and forest management practices and streamside residential development (such activities destabilize streambanks, increase sediment inputs, reduced shading, and remove woody debris).

Modification and degradation of stream channels caused by various construction or land management practices.

Alterations of the quantity or timing of stream flows, causing dewatering or unnatural flow fluctuations that diminish the quantity or quality of essential habitats.

Culverts, dams, irrigation diversions, and other instream barriers that fully or partially impede fish movement and reduce connectivity of habitat.

Strategies

Work with public and private landowners to improve efficiency of water use in order to maximize water return.

Support cooperative efforts to minimize impacts of return water due to sedimentation, increased salinity and temperature alteration.

Work with new stabilization projects to reduce impacts and support efforts to restore existing rip-rap areas to natural condition.

Implement programs to control exotic species and promote natural habitats that support native species but not exotic species.

Screen or modify irrigation diversions or other water intakes in a manner that prevents entrainment of fishes.

Support government and private conservation activities that encourage and support sustainable land management practices in riparian areas.

Restore stream channels or streambanks to a condition that simulates their natural form and function.

Implement various water conservation or flow management practices that restore essential habitats, simulate the natural hydrograph and also protect instream flows.

Remove or modify barriers in a manner that restores fish passage.

Montane Forest

Focus Areas

Mission/Swan Valley & Mountains

679,663 acres

This area is geologically similar to Glacier National Park, with the Swan Valley sandwiched in between the heavily glaciated ranges of the Mission and Swan Mountains. The mountain ranges and a strong Pacific storm track produce an inland maritime climate over a topography ranging from alpine ridges, cirque headwalls & basins down to moraines and river bottoms. The valley bottom, in addition to the riparian areas along streams and rivers, is comprised of a wide array of wetlands such as fens/peatlands, marshes, vernal pools, ponds, and lakes with the area being comprised of more than 15 percent wetlands (compared to the Montana average of less than 2 percent wetland area).

Tier One Community Types

There are less than 2% Tier One Community Types in this Focus Area, however this area serves as a major corridor for Tier One Species.

Conservation

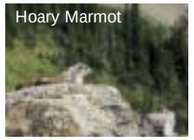
Concerns	Strategies
Habitat fragmentation and loss of connectivity, especially as a result of human population growth/development and related transportation network.	**Support strategic conservation easements by** conservation organizations and public agencies; **Identify and prioritize key wildlife** linkage areas, and work with other state and federal agencies, conservation groups, and landowners to restore wildlife connectivity; **Work with Montana Department of** Transportation and Federal Highway Commission to effectively mitigate impacts of highway construction.
Range or forest management practices.	**Support government and private conservation** activities that encourage and support sustainable land management practices (example: rest and rotation schedules).
Streamside residential development.	**Develop statewide riparian best management** principles.
Invasive or exotic plant species.	**Participate in partnerships to develop and** implement weed control strategies.
Altered fire regimes.	**Work with coordinating agencies to** mimic natural fire regimes.

Tier One Species

Amphibians
Western Toad

Birds
Common Loon
Trumpeter Swan
Harlequin Duck
Bald Eagle
Flammulated Owl
Black-backed Woodpecker
Olive-sided Flycatcher

Mammals
Townsend's Big-eared Bat
Hoary Marmot
Northern Bog Lemming
Gray Wolf
Grizzly Bear
Canada Lynx



Aquatic Focus Areas

Lower Clark Fork River

149 river miles

The lower Clark Fork River originates at the confluence of the Clark Fork River and the Flathead River near the town of Paradise and continues to the Idaho Border. Where the lower Clark Fork River leaves Montana, it is the largest river in Montana based on mean annual discharge. Relatively wet and warm winter maritime conditions commonly lead to rain-on-snow events that significantly affect the hydrology of tributaries to the lower Clark Fork River by increasing the frequency of high flow. The mainstem Clark Fork River has been substantially altered by the construction of the Thompson Falls, Noxon Rapids, and Cabinet Gorge hydroelectric projects.

Tier One Species

Fish

Westslope Cutthroat Trout
Bull Trout

Conservation: Concerns

Culverts, dams, irrigation diversions, and other instream barriers that fully or partially impede fish movement and reduce connectivity of habitat.

Modification and degradation of stream channels caused by various construction or land management practices.

Riparian vegetation effected by range and forest management practices and streamside residential development (such activities destabilize streambanks, increase sediment inputs, reduced shading, and remove woody debris).

Entrainment of juvenile and adult fishes by irrigation diversions or other water intakes.

Unnatural hydrograph and water temperatures associated with the presence and operations of large dams.

Non-native fish species.

Misidentification of fish species by anglers.

Strategies

Remove or modify barriers in a manner that restores fish passage to ensure full migratory movement.

Restore stream channels or streambanks to a condition that simulates their natural form and function.

Support government and private conservation activities that encourage and support sustainable land management practices in riparian areas;
Modify riparian management practices such that riparian vegetation is allowed to recover;
Develop statewide riparian best management principles.

Screen or modify irrigation diversions or other water intakes in a manner that prevents entrainment of fishes.

Work with appropriate authorities to restore hydrograph that mimics the natural regime.

Support activities to promote natural habitats that support native species.

Increase efforts to educate anglers on the identification of fish species.

Aquatic Focus Areas

Middle Clark Fork River

119 river miles

The Middle Clark Fork River extends about 115 river miles from Milltown Dam in Bonner, Montana, to its confluence with the Flathead River and is entirely free flowing. Its drainage is mountainous and covered with the large forested tracts of the Lolo National Forest and private timberlands, broken by grazing and cropland areas in the lower valleys down to the Thompson Falls Dam. Because the middle Clark Fork receives the waters of the Blackfoot, Bitterroot and upper Clark Fork basins, it is known as a steady and productive system that supports a consistent fishery.

Tier One Species

Fish

Westslope Cutthroat Trout
Bull Trout

Conservation: Concerns

Culverts, dams, irrigation diversions, and other instream barriers that fully or partially impede fish movement and reduce connectivity of habitat.

Modification and degradation of stream channels caused by various construction or land management practices.

Riparian vegetation effected by range and forest management practices and streamside residential development (such activities destabilize streambanks, increase sediment inputs, reduced shading, and remove woody debris).

Entrainment of juvenile and adult fishes by irrigation diversions or other water intakes.

Alterations of the quantity or timing of stream flows, causing dewatering or unnatural flow fluctuations that diminish the quantity or quality of essential habitats.

Unnatural hydrograph and water temperatures associated with the presence and operations of large dams.

Non-native fish species.

Strategies

Remove or modify barriers in a manner that restores fish passage to ensure full migratory movement.

Restore stream channels or streambanks to a condition that simulates their natural form and function.

Support government and private conservation activities that encourage and support sustainable land management practices in riparian areas;
Develop statewide riparian best management principles.

Screen or modify irrigation diversions or other water intakes in a manner that prevents entrainment of fishes.

Implement various water conservation or flow management practices that restore essential habitats and simulate the natural hydrograph;
To the extent feasible, operate dams to mimic a more natural hydrograph on the main channel of rivers and ensure a more natural thermal regime.

Work with appropriate authorities to restore hydrograph that mimics the natural regime.

Support activities to promote natural habitats that support native species.

Plains Grassland & Forest

Terrestrial Focus Areas

Terrestrial Focus Areas

Missouri Coteau

5,278,913 acres

This area is part of the large continental prairie grassland and pothole habitat. In most years, springtime finds this area dotted with small wetlands. These shallow wetlands shine amongst the small glacial hilltops that are covered with short- to mid-grass prairie species. Sagebrush and other mixed vegetation are found in lower elevations and basins.

Several wildlife and vegetative species in this area are unique, including the newly discovered species for Montana, the northern short-tailed shrew. Additionally, the Missouri Coteau is one of the few portions of Montana that is considered to be part of this North American duck factory.

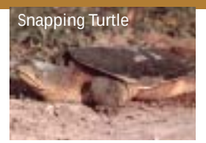
Montana Sedimentary Plains

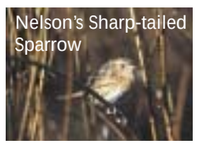
13,828,142 acres

This vast, gently sloping to rolling area contains scattered buttes and badlands. It sits on heavy clay soils and consists of mostly dry shrub lands and mixed grass prairies. It receives very little precipitation and is interspersed with woody draws that contain ponderosa pine and

snowberry. Agricultural practices can be found throughout the area that also supports many dry-land native wildlife species such as antelope, mule deer and greater sage-grouse.

Tier One Species





Amphibians
Northern Leopard Frog

Reptiles
Snapping Turtle
Spiny Softshell
Western Hog-nosed Snake
Milksnake
Smooth Greensnake

Birds
Common Loon
Trumpeter Swan
Bald Eagle
Yellow Rail
Whooping Crane
Piping Plover
Long-billed Curlew
Interior Least Tern
Black Tern
Owl Burrowing
Sedge Wren
Nelson's Sharp-tailed Sparrow

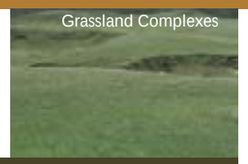
Mammals
Meadow Jumping Mouse
Townsend's Big-eared Bat

Tier One Community Types

Grassland Complexes	32%
Riparian & Wetland	6%

Tier One Community Types

Grassland Complexes	46%
Mixed Shrub/Grass Associations	12%
Sagebrush & Salt Flats	7%
Riparian & Wetland	5%



Conservation

Concerns

Loss of habitat due to conversion of native prairie to small grain crops.

Drainage of natural wetlands.

Invasive or exotic plant species.

Disruption of natural disturbance processes, especially fire.

Fragmentation of habitat due to fossil fuel exploration and development activities.

Strategies

Develop policy-based approaches that encourage the conservation of natural communities, rather than support their conversion;
Support public and private conservation programs/activities that encourage and support private land use stewardship;
Increase cooperative efforts to maintain ecological features or processes on public, private, and tribal lands.

Participate in government and private conservation partnerships to reduce the loss of wetland habitat and restore lost wetlands.

Cooperative efforts to reduce the abundance of exotic plant species.

Work with other agencies, tribes and private organizations to restore the natural disturbance processes.

Work with corporations, land owners and other agencies to reduce impacts of exploration.

Conservation

Concerns

Loss of habitat as a result of conversion of native prairie to agriculture.

Fragmentation of habitat due to fossil fuel exploration and development activities.

Invasive or exotic plant species.

Range or forest management practices.

Streamside residential development.

Strategies

Develop policy-based approaches that encourage the conservation of natural communities, rather than support their conversion;
Support cooperative programs/activities that encourage and support private land use stewardship.

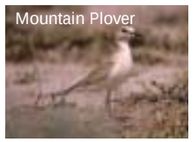
Educate on and research fossil fuel development and its impacts on natural landscape;
Work with corporations, land owners and other agencies to reduce impacts of exploration.

Develop cooperative efforts to reduce the abundance of exotic plant species.

Support government and private conservation activities that encourage and support sustainable land management practices (example: rest and rotation schedules).

Develop statewide riparian best management principles.

Tier One Species



Amphibians
Northern Leopard Frog

Reptiles
Snapping Turtle
Spiny Softshell
Western Hog-nosed Snake
Milksnake

Birds
Common Loon
Trumpeter Swan
Bald Eagle
Greater Sage-Grouse
Whooping Crane
Mountain Plover
Long-billed Curlew
Interior Least Tern
Black Tern
Burrowing Owl

Mammals
Spotted Bat
Townsend's Big-eared Bat
Black-tailed Prairie Dog
Meadow Jumping Mouse
Black-footed Ferret
Canada Lynx
American Bison

Plains Grassland & Forest

Aquatic Focus Areas

Lower Missouri River

175 river miles

The lower Missouri River is a land of badlands, breaks and coulees. This section of the river flows through windswept plains dotted with pothole lakes that fill with melting snow. The river runs approximately 180 river miles from Fort Peck Dam to the North Dakota border. The section of river from the dam to the town of Wolf Point is uncharacteristically cool and clear, as water discharged from below the reservoir is devoid of sediment. From Wolf Point to the North Dakota border the Missouri remains warm, with warm water tributaries like the Poplar River, Red Water River and Big Muddy Creek.

Tier One Species

Fish

Pallid Sturgeon
Paddlefish
Shortnose Gar
Sturgeon Chub
Sicklefin Chub
Pearl Dace
Blue Sucker
Burbot
Sauger

Conservation: Concerns

Culverts, dams, irrigation diversions, and other instream barriers that fully or partially impede fish movement and reduce connectivity of habitat.

Modification and degradation of stream channels caused by various construction or land management practices.

Riparian vegetation effected by range and forest management practices and streamside residential development (such activities destabilize streambanks, increase sediment inputs, reduced shading, and remove woody debris).

Entrainment of juvenile and adult fishes by irrigation diversions or other water intakes.

Alterations of the quantity or timing of stream flows, causing dewatering or unnatural flow fluctuations that diminish the quantity or quality of essential habitats.

Water chemistry problems that arise due to municipal discharge, irrigation return water, and other sources.

Unnatural hydrograph and water temperatures associated with the presence and operations of large dams.

Non-native fish species.

Strategies

Remove or modify barriers in a manner that restores fish passage to ensure full migratory movement.

Restore stream channels or streambanks to a condition that simulates their natural form and function.

Support government and private conservation activities that encourage and support sustainable land management practices in riparian areas;
Modify riparian management practices such that riparian vegetation is allowed to recover;
Develop statewide riparian best management principles.

Screen or modify irrigation diversions or other water intakes in a manner that prevents entrainment of fishes.

Implement various water conservation or flow management practices that restore essential habitats and simulate the natural hydrograph.

Work with municipal government and private landowners to reduce point source pollutants.

Work with appropriate authorities to restore hydrograph that mimics the natural regime.

Support activities to promote natural habitats that support native species.

Plains Grassland & Forest

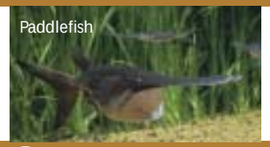
Aquatic Focus Areas

Lower Yellowstone River

278 river miles

The French called it “Roche Jaune,” meaning yellow rock, to describe the lower section of the Yellowstone that is lined with trees and meanders through yellow bluffs and rimrocks on its journey eastward. The area the river cuts through is a country of plateaus and wind-carved sandstone. By the time the Yellowstone has reached the mouth of the Bighorn River it has turned from a crystal, cold mountain stream into a warm plains river. As it flows northeast it picks up strength from the Powder and Tongue rivers. In the lower Yellowstone you can find species like sauger, burbot and paddlefish.

Tier One Species



Fish

Pallid Sturgeon
Paddlefish
Shortnose Gar
Sturgeon Chub
Sicklefin Chub
Pearl Dace
Blue Sucker
Burbot
Sauger

Conservation: Concerns

Dewatering as a result of water diversion.

Invasive non-native fish species.

Entrainment of juvenile and adult fishes by irrigation diversions or other water intakes.

Riparian vegetation effected by range and forest management practices and streamside residential development (such activities destabilize streambanks, increase sediment inputs, reduced shading, and remove woody debris).

Alterations of the quantity or timing of stream flows, causing dewatering or unnatural flow fluctuations that diminish the quantity or quality of essential habitats.

Culverts, dams, irrigation diversions, and other instream barriers that fully or partially impede fish movement and reduce connectivity of habitat.

Strategies

Work with public and private land owners to improve efficiency of water use in order to maximize water return;
Protect instream flow reservations;
Develop statewide riparian best management principles.

Develop programs to control invasive species and promote natural habitats that support native species.

Screen or modify irrigation diversions or other water intakes in a manner that prevents entrainment of fishes.

Support government and private conservation activities that encourage and support sustainable land management practices in riparian areas.
Modify riparian management practices such that riparian vegetation is allowed to recover;
Develop statewide riparian best management principles.

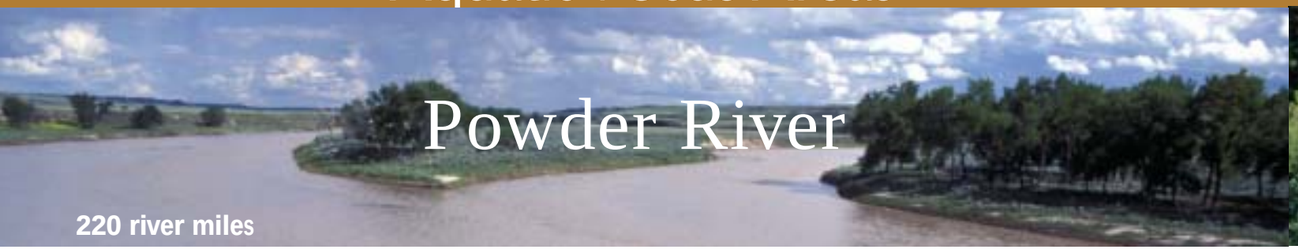
Implement various water conservation or flow management practices that restore essential habitats, simulate the natural hydrograph and also protect instream flows.

Remove or modify barriers in a manner that restores fish passage.

Plains Grassland & Forest

Aquatic Focus Areas

Aquatic Focus Areas



Powder River

220 river miles

The Powder River is noted as being one mile wide and one inch deep. It cuts through an area that can be described as a complex maze of draws. A major spawning tributary for native fishes found in the Yellowstone system, the Powder River provides spawning and nursery habitat for sauger, shovelnose sturgeon, channel catfish and many cyprinid minnow species. It is so named because of the gunpowder-colored sand on its banks, although the Indians and Lewis & Clark called the river "Red Stone" because of the color of rocks along its course.

Tongue River

221 river miles

The headwaters of the Tongue River rise in the Bighorn Mountains of Wyoming. From these sources the river flows northeast to its confluence with the Yellowstone River at Miles City. The 3,500-acre Tongue River Dam controls the river's flows in Montana. Above the reservoir, the river meanders through a broad open valley. Here its main features are turbid water, slow velocity, muddy bottoms, and warm temperatures. Downstream from the dam, the river flows through a narrow canyon. With an increasing gradient, cooler water temperatures, and gravel bottoms, it slows back down through meandering valley streams to its confluence with the Yellowstone.

Tier One Species

Sturgeon Chub

Fish

Sturgeon Chub
Burbot
Sauger

Sauger

Conservation: Concerns

Dewatering as a result of water diversion.

Riprap and other streambank stabilization work.

Invasive non-native fish species.

Entrainment of juvenile and adult fishes by irrigation diversions or other water intakes.

Modification and degradation of stream channels caused by various construction or land management practices.

Alterations of the quantity or timing of stream flows, causing dewatering or unnatural flow fluctuations that diminish the quantity or quality of essential habitats.

Culverts, dams, irrigation diversions, and other instream barriers that fully or partially impede fish movement and reduce connectivity of habitat.

Strategies

Work with public and private land owners to improve efficiency of water use in order to maximize water return;
Protect instream flow reservations.

Work with new stabilization projects to reduce impacts and support efforts to restore existing rip-rap areas to natural condition;
Develop statewide riparian best management principles.

Develop programs to control invasive species and promote natural habitats that support native species.

Screen or modify irrigation diversions or other water intakes in a manner that prevents entrainment of fishes.

Restore stream channels or streambanks to a condition that simulates their natural form and function.
Modify riparian management practices such that riparian vegetation is allowed to recover.

Implement various water conservation or flow management practices that restore essential habitats, simulate the natural hydrograph and also protect instream flows

Remove or modify barriers in a manner that restores fish passage.

Tier One Species

Paddlefish

Fish

Paddlefish
Sturgeon Chub
Blue Sucker
Burbot
Sauger

Burbot

Conservation: Concerns

Dewatering as a result of water diversion.

Water chemistry problems due to irrigation return water and the discharge of wastewater from coal bed methane operations, and other sources.

Entrainment of juvenile and adult fishes by irrigation diversions or other water intakes.

Modification and degradation of stream channels caused by various construction or land management practices.

Culverts, dams, irrigation diversions, and other instream barriers that fully or partially impede fish movement and reduce connectivity of habitat.

Loss of species (mountain whitefish and mountain sucker) below Tongue River Dam due to de-watering and drought.

Strategies

Work with public and private land owners to improve efficiency of water use in order to maximize water return;
Protect instream flow reservations.

Support cooperative efforts to minimize impacts of return water due to sedimentation, increased salinity and temperature alteration;
Study waters entering the Tongue River as a result of coal bed methane development in both Montana and Wyoming.

Screen or modify irrigation diversions or other water intakes in a manner that prevents entrainment of fishes.

Restore stream channels or streambanks to a condition that simulates their natural form and function;
Modify riparian management practices such that riparian vegetation is allowed to recover;
Develop statewide riparian best management principles.

Remove or modify barriers in a manner that restores fish passage.

Support cooperative efforts to increase water flow and reduce barriers to migration specifically affecting these species.

Shrub Grassland

Terrestrial Focus Areas

Terrestrial Focus Areas

Bighorn Intermontane Basin

290,287 acres

The Bighorn Basin is home to a very diverse wildlife community and represents a limited geographic area at the end of its range that resembles communities more typical of the Great Basin and Colorado Plateau than Montana. Riparian areas are limited to minor drainages. The Basin is the driest area in Montana, typically

receiving only 6 inches of precipitation annually. Snow seldom lasts due to the predominate and seemingly ever-present southwest winds. Native vegetation is generally dominated by black sagebrush, Wyoming big sagebrush, and greasewood. Understory grasses are generally sparse with invading annuals such as cheatgrass.

Tier One Species

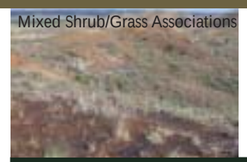
Amphibians
Northern Leopard Frog

Reptiles
Western Hog-nosed Snake
Milksnake

Birds
Bald Eagle
Greater Sage-Grouse
Mountain Plover
Long-billed Curlew
Burrowing Owl

Mammals
Spotted Bat
Pallid Bat
Black-tailed Prairie Dog
White-tailed Prairie Dog
Gray Wolf
Black-footed Ferret

Tier One Community Types



Sagebrush & Salt Flats	34%
Grassland Complexes	31%
Mixed Shrub/Grass Associations	6%

Conservation

Concerns

Loss of habitat due to conversion agriculture.

Drainage of natural wetlands.

Invasive or exotic plant species.

Disruption of natural disturbance processes, especially fire.

Fragmentation of habitat due to fossil fuel exploration and development activities.

Strategies

Develop policy-based approaches that encourage the conservation of natural communities, rather than support their conversion;
Support public and private conservation programs/activities that encourage and support private land use stewardship.

Participate in government and private conservation partnerships to reduce the loss of wetland habitat and restore lost wetlands.

Implement cooperative efforts to reduce the abundance of exotic plant species.

Work with other agencies, tribes and private organizations to restore the natural disturbance processes.

Work with corporations, land owners and other agencies to reduce impacts of exploration;
Educate on and research fossil fuel development and its impacts on natural landscape.

Terrestrial Focus Areas

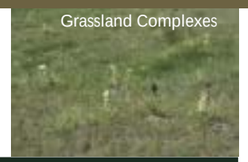
Montana Glaciated Plains

17,806,106 acres

This area is dominated by level- to rolling- till plains covered by sagebrush grasslands and mixed short-grass prairie. It encompasses several island mountain ranges. In the east, this focus area is characterized by prairie dissected by the major tributaries to the Milk, Missouri, Marias,

and Musselshell River drainages. From the bluffs dotted with ancient teepee rings, one can observe the numerous prairie wildlife species. To the west, the area is characterized by the numerous rugged breaks supporting timber stands. This area is considered very fertile wheat-growing country.

Tier One Community Types



Grassland Complexes	42%
Sagebrush & Salt Flats	5%
Riparian & Wetland	3%

Conservation

Concerns

Conversion of native prairie to small grain production.

Petroleum exploration and development impacts.

Invasive or exotic plant species.

Loss of natural wetlands.

Strategies

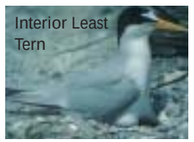
Develop policy-based approaches that encourage the conservation of natural communities, rather than support their conversion;
Support cooperative programs/activities that encourage and support private land and tribal land use stewardship;
Implement practices (economic and ecological) that sustain ranching profitability and promote public access.

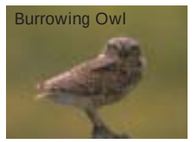
Work with corporations, land owners and other agencies to reduce impacts of exploration;
Educate on and research fossil fuel development and its impacts on natural landscape.

Develop cooperative efforts to reduce the abundance of exotic plant species.

Maintain existing structure and functional uses of wetlands on private and federally managed lands.

Tier One Species





Amphibians
Northern Leopard Frog

Reptiles
Snapping Turtle
Spiny Softshell
Western Hog-nosed Snake
Milksnake

Birds
Common Loon
Bald Eagle
Greater Sage-Grouse
Yellow Rail
Whooping Crane
Piping Plover
Mountain Plover
Long-billed Curlew
Interior Least Tern
Black Tern
Burrowing Owl

Mammals
Spotted Bat
Townsend's Big-eared Bat
Black-tailed Prairie Dog
Black-footed Ferret
Canada Lynx
American Bison

Shrub Grassland

Terrestrial Focus Areas

Terrestrial Focus Areas

Montana Shale Plains

2,403,965 acres

This area is mostly privately owned. It can be considered mountain foothill terrain that contains many woody draws with ponderosa pine and hardwood stands throughout. It is very dry with annual precipitation not exceeding 12 inches, on average. Unique species such as the milksnake and western hog-nosed snake can be found here.

Powder River Basin/ Breaks/Scoria Hills

2,095,021 acres

Much of this unglaciated area extends across Montana's border into Wyoming. The flat to rolling, mixed-grass prairie contains considerable areas of sagebrush grassland as well as ponderosa pine and juniper woodlands broken by occasional rugged breaks. The Powder River cuts through the area providing significant riparian habitat for many species.

Tier One Species

Amphibians
Northern Leopard Frog

Reptiles
Spiny Softshell
Western Hog-nosed Snake
Milksnake

Birds
Common Loon
Bald Eagle
Greater Sage-Grouse
Whooping Crane
Mountain Plover
Long-billed Curlew
Black Tern
Burrowing Owl

Mammals
Townsend's Big-eared Bat
Black-tailed Prairie Dog
Meadow Jumping Mouse
Black-footed Ferret
Canada Lynx
American Bison

Tier One Community Types

Grassland Complexes	47%
Mixed Shrub/Grass Associations	22%
Sagebrush & Salt Flats	8%
Riparian & Wetland	2%

Conservation

Concerns	Strategies
Invasive or exotic plant species.	**Develop cooperative efforts to reduce** the abundance of exotic plant species.
Disruption of natural disturbance processes or fire regimes.	**Work with other agencies, tribes and** private organizations to restore the natural disturbance processes.
Conversion of natural habitat to croplands.	**Develop policy-based approaches that encourage** the conservation of natural communities, rather than support their conversion; **Support public and private conservation** programs/activities that encourage and support private land use stewardship; **Increase cooperative efforts to maintain** ecological features or processes on public, private, and tribal lands.
Range or forest management practices.	**Support government and private** conservation activities that encourage and support sustainable land management practices (example: rest and rotation schedules).

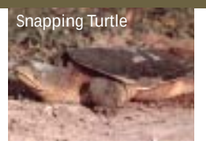
Tier One Community Types

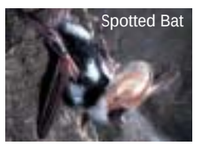
Grassland Complexes	35%
Mixed Shrub/Grass Associations	17%
Riparian & Wetland	6%
Sagebrush & Salt Flats	5%

Conservation

Concerns	Strategies
Loss of habitat as a result of conversion of native habitat to agriculture.	**Develop policy-based approaches that encourage** the conservation of natural communities, rather than support their conversion; **Support cooperative programs/activities** that encourage and support private land use stewardship.
Fragmentation of habitat due to fossil fuel exploration and development activities.	**Educate on and research fossil fuel** development and its impacts on natural landscape; **Study impacts of road development and** retention pond construction as a result of coal bed methane development in both Montana and Wyoming.
Range or forest management practices.	**Support cooperative activities that** encourage and support sustainable land management practices (example: rest and rotation schedules).
Disruption of natural disturbance processes, especially fire.	**Work with other agencies, tribes and** private organizations to restore the natural disturbance processes

Tier One Species





Amphibians
Northern Leopard Frog

Reptiles
Snapping Turtle
Spiny Softshell
Western Hog-nosed Snake
Milksnake

Birds
Common Loon
Trumpeter Swan
Bald Eagle
Greater Sage-Grouse
Whooping Crane
Long-billed Curlew
Black Tern
Burrowing Owl

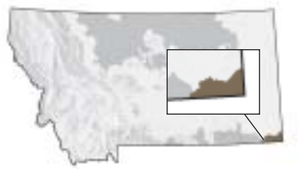
Mammals
Spotted Bat
Townsend's Big-eared Bat
Black-tailed Prairie Dog
Meadow Jumping Mouse
Black-footed Ferret
American Bison

Terrestrial Focus Areas

Shale Scablands

417,176 acres

This very dry area is covered mostly by sagebrush grassland, intersected by woody draws. The plant species that make up the woody draws are mostly green ash, buffaloberry, chokecherry and some juniper. This drought-impacted area has been called the "big empty," but in recent years has garnered much interest due to the discovery of coal bed natural gas.



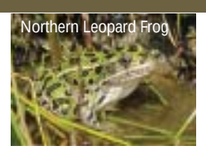
Aquatic Focus Areas

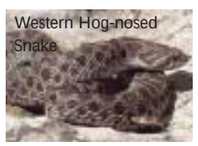
Middle Missouri River & Tributaries

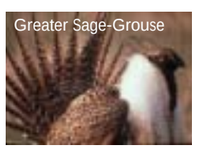
540 river miles

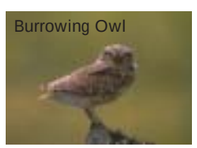
Once the Missouri River reaches the confluence with Hardy Creek, it becomes wide and slow but turns into whitewater as it flows over the remaining falls at Great Falls. At Great Falls, the middle Missouri River picks up increased volume from its confluence with the Sun River. From here down stream for more than 200 miles to Fort Peck Reservoir, it is the longest free-flowing section of the entire Missouri River. It flows through cottonwood forests and strikingly-white rock cliffs and bluffs. At the eastern limit of this focus area is Fort Peck Dam, the fourth largest freshwater reservoir in the world.

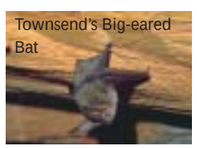
Tier One Species











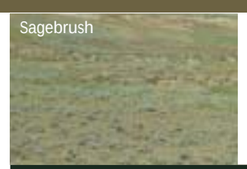
Amphibians
Northern Leopard Frog

Reptiles
Snapping Turtle
Spiny Softshell
Western Hog-nosed Snake
Milksnake

Birds
Common Loon
Bald Eagle
Greater Sage-Grouse
Whooping Crane
Mountain Plover
Long-billed Curlew
Black Tern
Burrowing Owl

Mammals
Townsend's Big-eared Bat
Black-tailed Prairie Dog
Meadow Jumping Mouse
Black-footed Ferret

Tier One Community Types



Sagebrush & Salt Flats	30%
Grassland Complexes	13%
Salt-desert Shrub/Dry Salt Flats	9%
Riparian & Wetland	9%
Mixed Shrub/Grass Associations	5%

Conservation

Concerns

Loss of habitat due to conversion of native prairie to crops.

Drainage of natural wetlands.

Invasive or exotic plant species.

Disruption of natural disturbance processes, especially fire.

Range or forest management practices.

Strategies

Develop policy-based approaches that encourage the conservation of natural communities, rather than support their conversion;
Support public and private conservation programs/activities that encourage and support private land use stewardship;

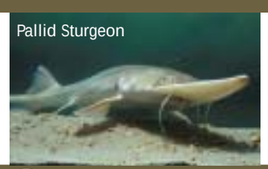
Participate in government and private conservation partnerships to reduce the loss of wetland habitat and restore lost wetlands.

Develop cooperative efforts to reduce the abundance of exotic plant species.

Work with other agencies, tribes and private organizations to restore the natural disturbance processes.

Support government and private conservation activities that encourage and support sustainable land management practices (example: rest and rotation schedules).

Tier One Species



Fish

Pallid Sturgeon	Sturgeon Chub	Burbot
Paddlefish	Sicklefin Chub	Sauger
Shortnose Gar	Blue Sucker	

Conservation: Concerns

Culverts, dams, irrigation diversions, and other instream barriers that fully or partially impede fish movement and reduce connectivity of habitat.

Modification and degradation of stream channels caused by various construction or land management practices.

Riparian vegetation effected by range and forest management practices and streamside residential development (such activities destabilize streambanks, increase sediment inputs, reduced shading, and remove woody debris).

Entrainment of juvenile and adult fishes by irrigation diversions or other water intakes.

Alterations of the quantity or timing of stream flows, causing dewatering or unnatural flow fluctuations that diminish the quantity or quality of essential habitats.

Water chemistry problems that arise due to municipal discharge, irrigation return water, and other sources.

Unnatural hydrograph and water temperatures associated with the presence and operations of large dams.

Non-native fish species.

Strategies

Remove or modify barriers in a manner that restores fish passage to ensure full migratory movement

Restore stream channels or streambanks to a condition that simulates their natural form and function

Support government and private conservation activities that encourage and support sustainable land management practices in riparian areas;
Modify riparian management practices such that riparian vegetation is allowed to recover;
Develop statewide riparian best management principles.

Screen or modify irrigation diversions or other water intakes in a manner that prevents entrainment of fishes.

Implement various water conservation or flow management practices that restore essential habitats and simulate the natural hydrograph;
Protect instream flow reservations.

Work with municipal government and private landowners to reduce point source pollutants.

Work with appropriate authorities to restore hydrograph that mimics the natural regime.

Support activities to promote natural habitats that support native species.

Montana's Community Types
of Greatest Conservation Need

Montana's Community Types
of Greatest Conservation Need

Although fish and wildlife communities have not yet been defined for all of Montana, enough information exists about fish, wildlife and their associated habitats to begin describing community types. The following are the community types identified as in the greatest need of conservation statewide. Large numbers of Tier I species can be found in these communities. The success of these and many other species will depend on conserving these community types regardless of the geographic location they are found in.

Grassland Complexes

Grassland communities occur in broad western mountain valleys, high mountain meadows, and on the plains of eastern Montana. Very low to high cover grasses are characteristic of these areas. This array of grass types are found in open lands and often interspersed among shrubs. This community type is essentially associated with more terrestrial species in greatest need of conservation than any other community type in Montana.

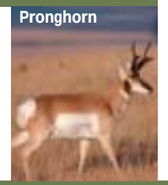
Fauna Associations

Total Essentialists*:

Amphibians: 7
Reptiles: 12
Birds: 121
Mammals: 62

Tier One Species: 23

*Species that depend on this habitat for breeding and survival.

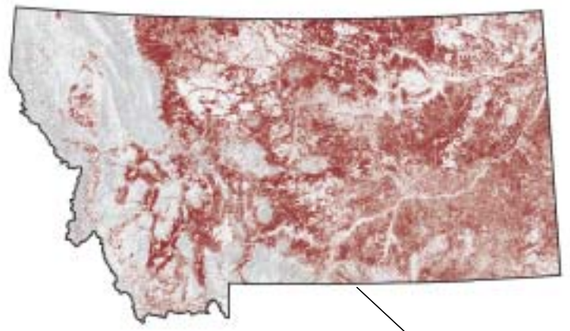


Total Generalists‡:

Amphibians: 3
Reptiles: 5
Birds: 134
Mammals: 20

Tier One Species: 9

‡Species that thrive in this and other habitats ***and*** benefit from its conservation.



Grassland Complexes comprise 31,551,627 acres or about 34% of Montana

Conservation

Concerns	Strategies
Spread of noxious weeds and non-native plants, especially knapweed, leafy spurge, and cheatgrass.	Prevent introduction and spread of noxious weeds on existing tracts of palouse prairie; Restore areas infested with the highly flammable, invasive cheatgrass, returning them to native grasses and forbs; Create a stable native seed source for grass restoration.
Impacts from oil, gas, geothermal, and coal extraction and development.	Monitor leasing and development decisions and regulations applying to geophysical exploration; Work with corporations, land owners and other agencies to reduce impacts of exploration; Conduct research to determine impacts from petroleum exploration and extraction activities.
Fragmentation and habitat loss due to agricultural and subdivision development.	Promote incentives and education for private landowners to protect natural habitat; Support strategic conservation easements by conservation organizations and public agencies to provide large blocks of short grass types in a diverse mosaic of habitats; Identify and prioritize key wildlife linkage areas, and work with other state and federal agencies, conservation groups, and landowners to restore wildlife connectivity; Promote further development of county ordinances that help guide future residential and commercial development.
Range or forest management practices.	Support government and private conservation activities that encourage and support sustainable land management practices (example: rest and rotation schedules).
Lack of sufficient habitat cover data layers.	Support cooperative efforts to develop up to date, comprehensive habitat cover layers.

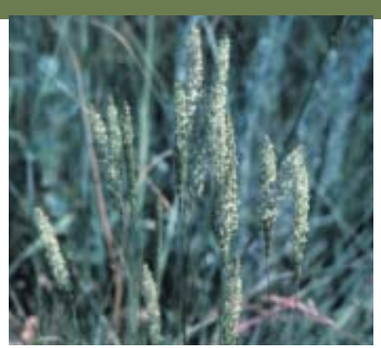
Flora Associations

Blue Grama

Missouri Goldenrod

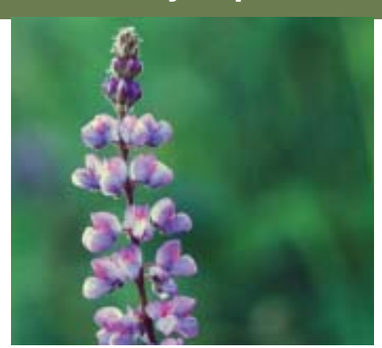
Needle and Thread Grass

Prairie June Grass



Prickly Pear Cactus

Silvery Lupine



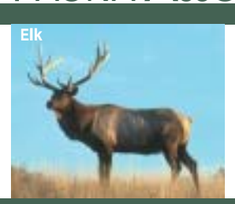
Mixed Broadleaf Forests:
Woody Draws and Aspen Galleries

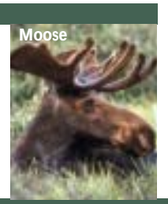
Woody draws are drier, upland streambed-type areas, characterized by a great diversity and density of vegetation similar to wetlands. These ribbons of life throughout eastern Montana provide essential cover, food and water for high concentrations of wildlife.

Aspen galleries often occur within grassland openings or along the border between grassland openings and coniferous forests. From native tall-grass or mixed-grass prairie plants to wet meadow species, mature aspen galleries promote understory growth of a rich variety of grasses, wildflowers and shrubs. They provide unique foods including seeds, berries or nuts for an equally diverse array of wildlife.

Fauna Associations

Total Essentialists*:





Birds: 2
Mammals: 3

Tier Two Species:
Black & White Warbler

*Species that depend on this habitat for breeding and survival.

Total Generalists‡:

Birds: 15
Mammals: 6

Tier Two Species:
American Bittern, Blue Grouse, Veery, Yellow-breasted Chat

‡Species that thrive in this and other habitats ***and*** benefit from its conservation.

Mixed Broadleaf Forests
comprise
883,498 acres
or about
1% of Montana

Conservation

Concerns

All Broadleaf Forests

Loss of broadleaf forest habitat due to rangeland and forest management practices, clearing for agricultural use, and impacts related to human population growth.

Woody Draws

Loss of mature snags in woody draw areas.

Loss of shrub layers and lack of overstory recruitment due to range management practices in woody draws.

Aspen Galleries

Altered natural fire regime in aspen galleries (increases encroachment of conifers).

Strategies

Work with agency and private land conservation efforts to place easements on lands and implement resource management for aspen galleries, cottonwood forests and woody draws;
Promote incentives and education for private landowners to protect all three broadleaf forest types.

Promote public education of the need to preserve older snags in woody draws;
Support initiatives to reestablish and maintain green ash in woody draws.

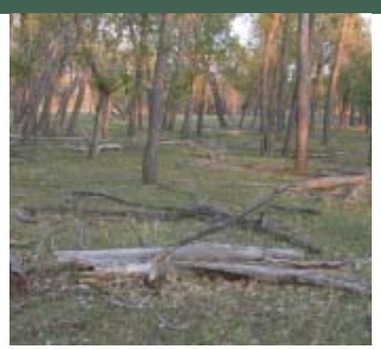
Work with public and private landowners to provide incentives for sustainable management;
Work to develop best management principals for woody draw habitats.

Work with other agencies of authority to reestablish natural fire regime to promote aspen gallery health.

Flora Associations

Buffaloberry

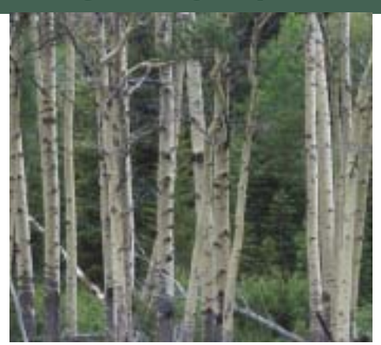
Cottonwood



Green Ash

Paper Birch

Quaking Aspen



Thimble Berry

Mixed Shrub/Grass Associations

The mixed shrub community types are shrub-dominated areas that also support grass. These types can be either moist (mesic, found mostly in east Montana) or dry (xeric, found mostly in western Montana). They usually occur at low elevation and often along lower slopes. These communities are the transition between pure shrub and grass communities. They support a very unique assembly of species.

Fauna Associations

Total Essentialists*:

Reptiles: 2
Birds: 3
Mammals: 5

Tier One Species:
Black-tailed Prairie Dog
Milksnake
Spotted Bat

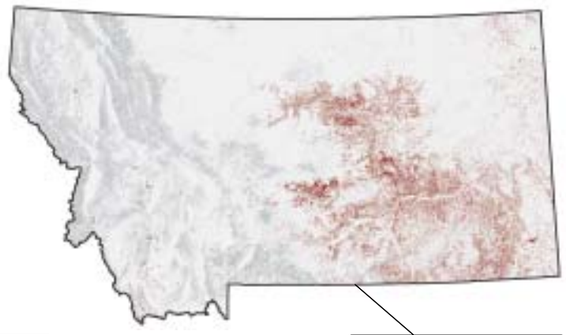
*Species that depend on this habitat for breeding and survival.

Total Generalists‡:

Reptiles: 2
Birds: 17
Mammals: 6

Tier One Species:
Burrowing Owl
Mountain Plover
Greater Sage-Grouse
Western Hog-nosed Snake

‡Species that thrive in this and other habitats ***and*** benefit from its conservation.



Mixed Shrub/Grass Associations comprise 4,159,693 acres or about 5% of Montana

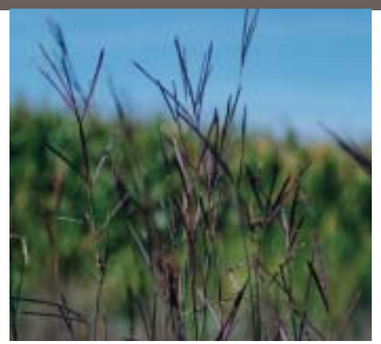
Conservation

Concerns	Strategies
Loss of habitat due to conversion of native habitat to agriculture or as a result of human population growth/ development.	**Support private land easements that protect natural habitat to** provide large blocks of a diverse mosaic of shrub/grass habitats; **Develop incentives and education for private landowners to protect** natural habitat; **Support government and private conservation programs/activities** that encourage and support private land stewardship; **Identify and prioritize key wildlife linkage areas in this community,** and work with other state and federal agencies, conservation groups, and landowners to restore wildlife connectivity.
Invasive species and potential for spreading.	**Work with off-road vehicle users to help reduce spread of invasive** weed; **Create a stable native seed source for shrubs and grass restoration;** **Support cooperative efforts to reduce the abundance of exotic or** invasive plant species.
Oil, gas, coal, coal bed methane, and geothermal development.	**Monitor leasing and development decisions and regulations applying** to geophysical exploration; **Research the impacts such as road building and water retention pond** construction as they relate to gas and oil development activities.
Range or forest management practices.	**Support government and private conservation activities that** encourage and support sustainable land management practices (example: rest and rotation schedules).

Flora Associations

Four-wing Shade Scale

Big Bluestem



Idaho Fescue

Snowberry

Sumac

Yucca

Riparian & Wetland

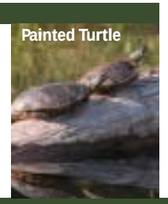
Montana's riparian and wetland communities vary widely depending on the area of the state and elevation where they are located. Generally they represent the green zones along rivers, streams, lakes and reservoirs and include potholes, wet meadows, marshes and bogs. As a result of the adjacent water, these communities support the greatest concentration of plants and animals in Montana, serving as a unique transition zone between the aquatic and the terrestrial environments.

Fauna Associations

Total Essentialists*:

Amphibians: 16
Reptiles: 6
Birds: 149
Mammals: 22

Tier One Species: 17

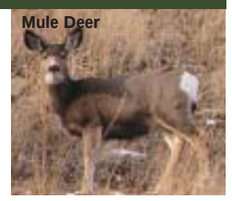


*Species that depend on this habitat for breeding and survival.

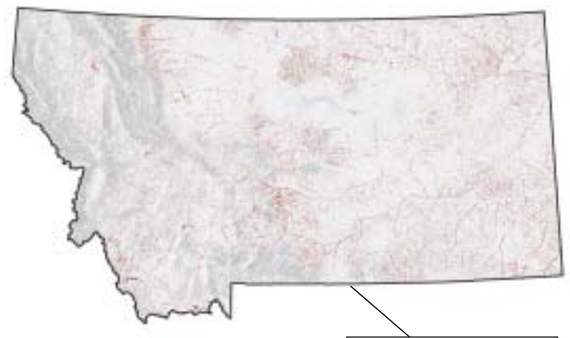
Total Generalists‡:

Reptiles: 5
Birds: 32
Mammals: 35

Tier One Species:
Western Hog-nosed Snake
Townsend's Big-eared Bat
Pygmy Rabbit



‡Species that thrive in this and other habitats ***and*** benefit from its conservation.



Riparian & Wetland comprise 3,724,224 acres or about 4% of Montana

Conservation

Concerns

All Riparian and Wetland

Draining and conversion of wetlands to agricultural cropland and subdivisions.

Loss of riparian habitat due to streamside residential development.

Adjacent uplands effected by range and forest management practices.

Invasive or exotic plant species.

Lack of a GIS coverage of wetlands across Montana.

Road construction that disrupts hydrologic patterns.

Cottonwood Stands

Flood control and channelization through riprap and dams. Culverts, dams, irrigation diversions, and other instream barriers that fully or partially alter natural flood regimes (eliminates cottonwood regeneration).

Unsustainable harvest of older cottonwoods for lumber or pulp.

Strategies

Work with other groups to identify riparian areas and wetlands that are critically important to wildlife diversity and work toward protection and enhancement;
Develop statewide best management principals for Montana's riparian and wetland areas.

Support strategic conservation easements by conservation organizations and public agencies.

Support government and private conservation activities that encourage and support sustainable land management practices.

Support efforts to eradicate exotic or invasive plant species.

Partner with other agencies to develop up-to-date comprehensive wetland and riparian GIS coverage.

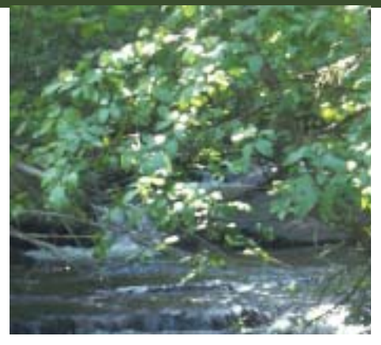
Work with department of transportation to minimize and mitigate impacts of new and existing road development including streambank stabilization.

Work with appropriate authorities to restore or mimic historic hydrograph to promote productive cottonwood stands in river corridors.

Maintain and recruit old-growth trees for snags used by cavity-nesting species.

Riparian & Wetland Types

Broadleaf



Conifer

Graminoid Forb

Intermittent Shrub

Prairie Pothole

Shrub

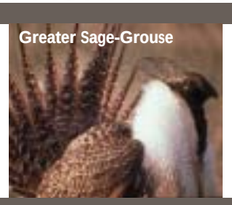
Sagebrush & Salt Flats

The sagebrush community includes all sagebrush and their associated grass and shrub. Specific attention is focused on the "shrub steppe," which is a transitional zone between arid shrubland, semiarid grassland, and salt flats occurring in southeast Montana. The communities can be visualized as a mosaic of sagebrush species that occur in discontinuous pockets throughout Montana, but mostly in the eastern two thirds.

Sagebrush & Salt Flats
comprise
5,625,886 acres
or about
6% of Montana

Fauna Associations

Total Essentialists*:



Amphibians: 1
Reptiles: 1
Birds: 8
Mammals: 13

Tier One Species: 7

*Species that depend on this habitat for breeding and survival.

Total Generalists‡:

Amphibians: 3
Reptiles: 7
Birds: 32
Mammals: 16

Tier One Species:
Snapping Turtle
Western Hog-nosed Snake
Mountain Plover
Long-billed Curlew
Black-tailed Prairie Dog

‡Species that thrive in this and other habitats ***and*** benefit from its conservation.

Conservation

Concerns

Range management practices and conversion to agriculture, which alter the distribution and condition of Montana's sagebrush habitat.

Invasion of weeds and woody and non-native species.

Loss of sagebrush as a result of human population growth/development.

Oil, gas, and geothermal exploration and development.

Impacts from recreational use.

Strategies

Protect large blocks of healthy sagebrush through conservation easements;
Work with private landowners through landowner incentives and conservation easements to protect critical habitats.

Support cooperative efforts to reduce invasive and exotic plant species;
Work with off-road vehicle users to help reduce spread of invasive weeds.

Support strategic conservation easements by conservation organizations and public agencies;
Identify and prioritize key wildlife linkage areas, and work with other state and federal agencies, conservation groups, and landowners to restore wildlife connectivity.

Monitor leasing and development decisions and regulations applying to geophysical exploration;
Conduct research on fossil fuel development and its impacts on sagebrush.

Work with the public and other agencies to establish sustainable recreation management practices, including designations of lands open, limited, or closed to off-road vehicle use.

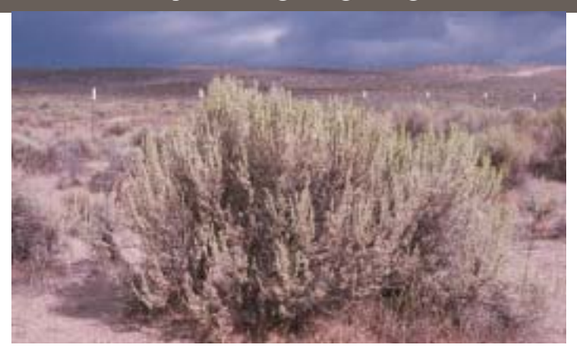
Flora Associations

Basin Big Sage

Black Sage

Mountain Big Sage

Wyoming Big Sage



Mountain Streams

Mountain streams of western Montana are typically cold and clear. They serve as the headwaters for all major river systems in Montana. Mountain streams often flow through montane conifer forests beginning at the highest elevations and are home to abundant native fish species. Many of these fish are imperiled and represent the remaining stocks of Montana's westslope cutthroat and bull trout.

Fauna Associations

Total Essentialists*:

Mussels: 1
Crayfish: 1
Fish: 15

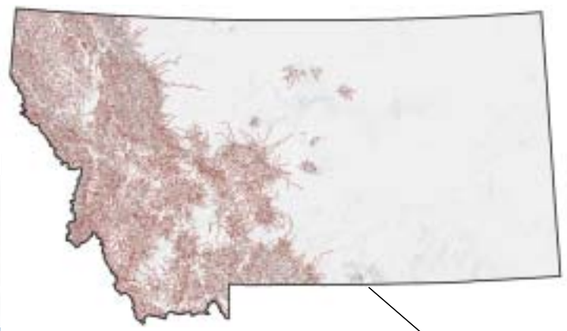
Tier One Species: 7

*Species that depend on this habitat for breeding and survival.

Total Generalists‡:

Species found in this Community Type typically have essential associations.

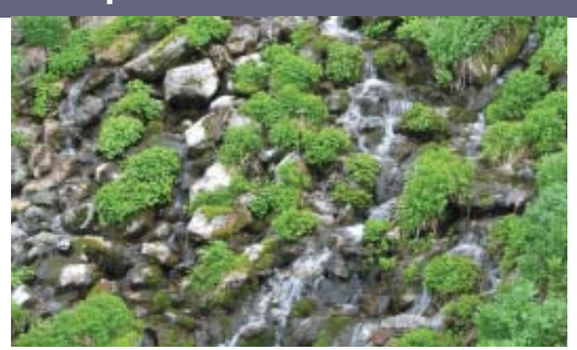
‡Species that thrive in this and other habitats ***and*** benefit from its conservation.



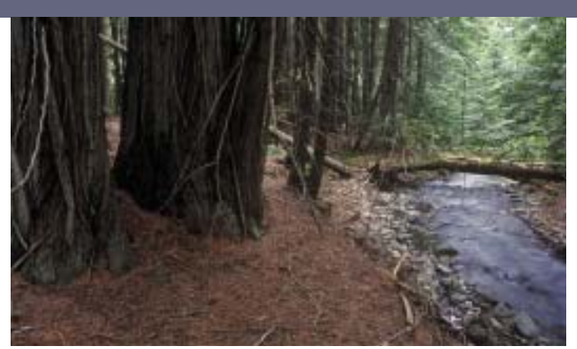
Mountain Streams comprise 59,364 Stream Miles in Montana

Stream Types

Alpine Headwaters Stream

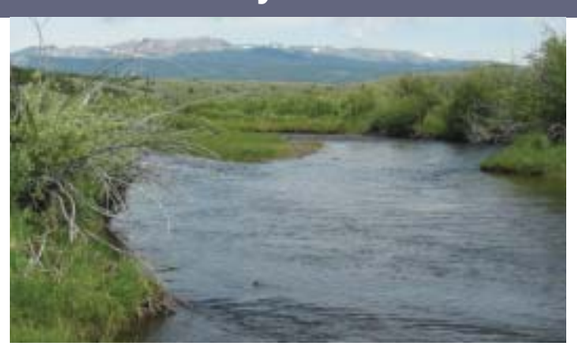


Forested Stream



Glacial Stream

Valley Stream



Conservation

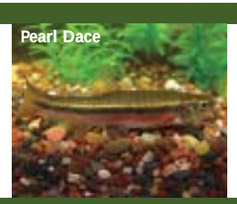
Concerns	Strategies
Riparian habitats effected by roads, housing developments, and range and forest management practices that degrade the adjacent riparian habitat and stream channel.	**Support government and private conservation activities that** encourage and support sustainable land management practices in riparian areas; **Develop statewide riparian best management principles**; **Use conservation easements and cooperative efforts to address human** population growth and related impacts; **Work with Department of Transportation to mitigate for impacts of** new and existing roads and highways.
Stream dewatering.	**Protect instream flow reservations**; **Increase instream flows through water leasing and water conservation** measures; **Increase installation of stockwater wells in place of irrigation** ditches.
Entrainment of fish in irrigation diversions.	**Screen or modify irrigation diversions or other water intakes in a** manner that prevents entrainment of fishes.
Stream channel alteration.	**Restore stream channels, streambanks and riparian areas to a condition** that simulates their natural form and function.
Introductions of non-native fishes.	**Protect native species through habitat protection and enhancement,** controlling and in some cases removing non-native species, and restoring or introducing native fishes into suitable waters.

Prairie Streams

There are at least 18,000 miles of prairie streams in Montana that have water either intermittently or permanently flowing through them in an otherwise dry region. These low elevation streams east of the Rocky Mountains are warmer than their counterparts in western Montana. They support an equally rich, but different, variety of fish. Many of these streams are slow moving, sometimes turbid and weedy. They offer good rearing habitat for associated fish species and support many amphibians and reptiles. They are also crucial for populations of terrestrial wildlife.

Fauna Associations

Total Essentialists*:



Mussels: 2
Crayfish: 2
Fish: 21

Tier One Species:
Pearl Dace

*Species that depend on this habitat for breeding and survival.

Total Generalists‡:

Species found in this Community Type typically have essential associations.

‡Species that thrive in this and other habitats ***and*** benefit from its conservation.

Prairie Streams comprise 91,189 Stream Miles in Montana

Conservation

Concerns	Strategies
Prairie stream riparian habitat effected by range management practices.	**Support government and private conservation activities that** encourage and support sustainable land management practices; **Support all management practices that maintain riparian vegetation** and streambank and channel stability in excellent condition.
Stream diversions and dewatering.	**Implementation of various water conservation or flow management** practices that restore essential habitats and simulate the natural hydrograph; **Protect instream flow reservations;** **Increase installation of stockwater wells in place of irrigation ditches;** **Increase instream flows through water leasing and water** conservation measures.
Entrainment of fish in irrigation diversions.	**Screen or modify irrigation diversions or other water intakes in a** manner that prevents entrainment of fishes.
Poorly understood impacts of petroleum exploration and extraction.	**Increase research and scientific studies on impacts of coal bed methane** on prairie stream environments in both Montana and Wyoming.
Introductions of non-native fishes.	**Develop programs to help control exotic species and promote natural** habitats that support native species; **Protect native species through habitat protection and enhancement,** controlling and in some cases removing non-native species, and restoring or introducing native fishes into suitable waters.

Stream Types

Great Plains Intermittent

Great Plains Prairie

Northern Glaciated Intermittent

Northern Glaciated Plains

Montana's Species of Greatest Conservation Need

Montana's Species of Greatest Conservation Need

Conservation efforts at the landscape (focus area) and community level offer some of the greatest potential to leverage resources in order to provide benefit to multiple species. However, some species are too specialized for broad-scale efforts to have an impact, or the population of a species has declined to the point where it requires individual management and research. The following species have been identified as Tier I (in greatest need of conservation). Fish, Wildlife & Parks has a clear obligation to use its resources in order to conserve them, regardless of the scale of conservation or research that is needed.

Invertebrates

Aquatic & Terrestrial Invertebrates in Montana

There are nearly 1,000 species of aquatic invertebrates in the state, and at least 10 times that number of terrestrial invertebrates. At this time, lack of information prevents us from understanding entirely what species even exist in Montana. The same deficiency of information prevents us from being able to determine which of these species are doing well and which are not.

As a result, the FWP steering committee decided that the complete strategy for conservation of Montana's species would only include two invertebrate groups, freshwater mussels and crayfish. All other invertebrates have been identified as in greatest need of inventory so that enough information can be collected to include all invertebrate groups in future revisions of the strategy.

Western Pearlshell (*Margaritifera falcata*)

The western pearlshell occurs near the Continental Divide on both sides. They are found in trout streams and rivers west of the divide, as well as in sand, gravel, and between cobble and boulders of the Missouri headwaters. The western pearlshell often are found in drainages with the west-slope cutthroat trout (its native fish host). Conservation concerns include: habitat degradation and fragmentation (*e.g.*, dams); point and nonpoint source pollution; and stream deterioration due to high sediment loads from agricultural runoff. Conservation strategies include: considering a management plan for the western pearlshell or including it in another comprehensive taxonomic plan; enforcement of regulations addressing dumping of pollutants into waterways; and restoration of stream channels and riparian areas.

Vertebrates: Fish

White Sturgeon (Kootenai River Population) (*Acipenser transmontanus pop. 1*)

The white sturgeon are landlocked in Montana and live isolated in the Kootenai River. Conservation concerns include reduced spring flows, unnatural flow fluctuations and altered thermal regime caused by Libby Dam operation; a suite of post-fertilization early life mortality factors and possible intermittent female stock limitation; and poor habitat conditions in the spawning areas. Conservation strategies include: coordinating more natural flow fluctuations in Libby Dam to enhance natural production; managing non-native species which may prey on young white sturgeon; conserving surrounding terrestrial habitat; and decreasing fine sediments found in lake areas.

Pallid Sturgeon (*Scaphirhynchus albus*)

Pallid sturgeons are found in the Missouri River below Fort Benton and the Yellowstone River below Forsyth. Pallid sturgeons reside in large, strong-current, turbid rivers and their impoundments with sand and gravel bottoms. Conservation concerns include: habitat modifications preventing movement to spawning and feeding areas, and altered natural conditions; upstream and nearby land use practices that degrade water quality; and heavy metals and organic compounds affecting reproduction. Conservation strategies include: restoring natural river conditions and protecting minimum instream flow reservations; supporting cooperative activities that encourage sustainable land management practices in riparian areas; and working with cooperators and public to identify and reduce point source pollutants.

Paddlefish (*Polyodon spathula*)

In Montana, paddlefish are found in the Yellowstone River as far upriver as Forsyth, as well as the Missouri River above and below Fort Peck Dam. Habitat includes slow or quiet waters of large rivers or impoundments. Paddlefish spawn on the gravel bars of large rivers during spring high water. Conservation concerns include: loss of spawning habitat (i.e. they need natural, free-flowing rivers to reproduce effectively); excessive and increasing water depletions for irrigation; and potential introduction of exotic competitors. Conservation strategies include: maintaining instream flows and spawning habitat in large rivers; increasing reservoir water retention during times of drought; and improving public awareness of paddlefish conservation concerns and impacts of non-native species.

Shortnose Gar (*Lepisosteus platostomus*)

The distribution of shortnose gar within Montana is limited, with documentation primarily in the Missouri River dredge cuts downstream of Fort Peck Dam. Shortnose gars are typically found in large rivers, quiet pools, backwaters, and oxbow lakes. Conservation concerns include: limited information in Montana; backwater habitat filled in for agriculture and modified by lack of channel maintenance flows; and cold-water release, lack of turbidity and artificial hydrograph below Fort Peck Dam on the

lower Missouri. Conservation strategies include: considering a management plan for the shortnose gar or including it in another comprehensive taxonomic plan; increasing conservation initiatives for backwater sloughs and channels; and regulating water regimes to be more closely tied to natural water regimes.

Yellowstone Cutthroat Trout (*Oncorhynchus clarki bouvieri*)

Most remaining indigenous populations in Montana inhabit Yellowstone headwater streams, though the Yellowstone River mainstem also supports Yellowstone cutthroat trout. In addition, over 100 lakes now support genetically pure Yellowstone cutthroat trout. Yellowstone cutthroat trout inhabit relatively clear, cold streams, rivers, and lakes. Conservation concerns include: persistence of non-native fish; widespread stocking of non-indigenous populations of yellowstone cutthroat trout; susceptibility to

whirling disease; and tributary dewatering by unsustainable irrigation practices. Conservation strategies include: continuing harvest management of non-native trout; decreasing genetic homogenization of yellowstone cutthroat trout; increasing funding for studying water disease; and decreasing channels and irrigation development.

Westslope Cutthroat Trout (*Oncorhynchus clarki lewisi*)

Westslope cutthroat trout are found in the Kootenai watershed, the Clark Fork watershed, and the headwaters of the Missouri and Saskatchewan Rivers. Spawning streams tend to be cold and nutrient poor, with gravel substrate in riffles and pool crests. Conservation concerns include: habitat loss due to poor natural resource use practices, residential development and impacts of forest roads; and increased hybridization with other species. Conservation strategies include: conserving habitat, including better

natural resource use practices; continuing to conserve genetically pure populations; and increasing stock populations of genetically pure westslope cutthroat trout.

The Kootenai River drainage population of redband trout is Montana's only native rainbow trout. Juveniles and adults use pools more than riffles. Redband trout generally select spawning areas in shallow pool tail-out areas with moderate water velocities dominated by gravel substrate. Conservation

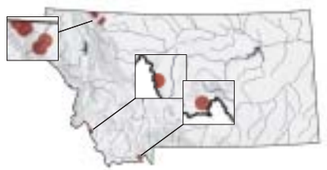
Columbia Basin Redband Trout (*Oncorhynchus mykiss gairdneri*)

concerns include: habitat connectivity loss due to construction of culverts, dams, irrigation diversions and other instream barriers that impede movement; range and forest management practices, including use of pesticides; and hybridization. Conservation strategies include: removing or modifying barriers in a manner that restores beneficial fish passage; managing riparian zones and waters where redband trout reside; and raising genetically pure hatchery Columbian Basin redband trout.

Montana populations are found mainly in the Kootenai and Clark Fork (including Bitterroot, Flathead/Swan and Blackfoot systems). Bull trout reside in larger streams and rivers or lakes and spawn in smaller tributary streams. Conservation concerns include: habitat degradation and loss due to land and water management

Bull Trout (*Salvelinus confluentus*)

practices; isolation and fragmentation of populations by both structural (e.g. dams) and environmental (e.g. thermal or pollution) barriers; and introduction of non-native fishes resulting in competition, predation and hybridization threats. Conservation strategies include: restoring degraded habitat and preserving existing healthy habitat; reestablishing connectivity between habitats isolated by constructed barriers; increasing management of non-native fishes; and preventing illegal introductions.



Montana's native lake trout populations remain in Waterton Lake, Glenns Lake, Cosley Lake, and St. Mary Lake in Glacier National Park and Lower St. Mary Lake in the Blackfeet Indian Reservation. Other native populations occur in Twin Lake in the Big Hole River drainage and Elk Lake in the Red Rock River

Lake Trout (native lakes) (*Salvelinus namaycush*)

drainage. In Montana, native lake trout inhabit a few deep, cold lakes remaining from glacial events. Conservation concerns include: little information on native populations; irregular recruitment; and genetic bottlenecks caused by small size of remaining populations. Conservation strategies include: considering a management plan for the lake trout (native lakes) or including it in another comprehensive taxonomic plan; increasing monitoring and surveying; and reintroducing genetically pure native populations.

Fish

Arctic Grayling (*Thymallus arcticus*)

Fluvial arctic grayling are restricted to the Big Hole River of southwest Montana. Arctic grayling are also found in a few natural lakes and reservoirs in western Montana. Cold water and gravelly substrate are needed for breeding purposes. Conservation concerns include: low flows during drought, decreasing survival due to high water temperatures, susceptibility to predation, and diminished habitat volume; displacement by non-native trout; degradation of riparian vegetation and stream banks by range or forest management practices; and dewatering the river for agricultural uses. Conservation strategies include: creating riparian rehabilitation projects for identified degraded habitats on the Big Hole River; reducing stocking of non-native fish; and supporting management of grazing to maintain riparian vegetation and channel stability.

Sturgeon Chub (*Hybopsis gelida*)

Sturgeon chub are found in the Lower Yellowstone and tributaries including the Tongue and Powder Rivers, as well as the mid and lower Missouri River. Sturgeon chub prefer sites having moderate currents and depths, and sand or rock substrates. Conservation concerns include: habitat alteration by dam operations, reduced turbidities and/or altered temperature and flow regimes; channelization of the Missouri River due to irrigation operations; removal of wild individuals used for bait fish; and constriction of range due to low stream flows. Conservation strategies include: developing conservation practices on large rivers in eastern Montana; educating public on the necessity of native species; and repopulating tributaries such as Teton and Milk Rivers to establish periphery populations.

Sicklefin Chub (*Hybopsis meeki*)

In Montana, sicklefin chub are found in the middle and lower Missouri River and lower Yellowstone River. They seem to prefer deeper water and sandy substrate. Spawning occurs in main channel areas of large turbid rivers, which they inhabit. Conservation concerns include: habitat alteration by dam operations, reduced turbidities and/or altered temperature and flow regimes; channelization of the Missouri river due to irrigation operations; and removal of wild individuals used for baitfish. Conservation strategies include: developing conservation practices on large rivers in Eastern Montana to include sustainable irrigation; educating public on the necessity of native species; and considering a management plan for the sicklefin chub or including it in another comprehensive taxonomic plan.

Pearl Dace (*Margariscus margarita*)

In Montana, pearl dace occur only in the Missouri and Saskatchewan River basins. Most known localities are in south-flowing tributaries to the Missouri River, downstream of the confluence of the Milk River. Pearl dace occur in lakes, cool bog ponds, creeks, and springs. Conservation concerns include: vulnerability of populations to predation and competition; collection by anglers seeking bait minnows; and anthropogenic stressors that increase water temperatures. Conservation strategies include: reducing stocking of non-native fish that compete or prey on this species; educating anglers of importance of native fish; and conserving prairie streams to include better range management practices.

Blue Sucker (*Cycleptus elongatus*)

In Montana, blue suckers are found in the Missouri and Yellowstone Rivers. They prefer swift current areas of large rivers. They feed on insects in cobble areas and then migrate upriver to congregate in fast, rocky areas to spawn. Conservation concerns include: habitat changes caused by large dams that block passage to spawning grounds, alter stream flow, and eliminate peak flows initiating spawning runs; channelization of large lotic systems; and changes in riparian habitat with less regeneration of woody trees and understory. Conservation strategies include: regulating water regimes to be more closely tied to natural water regimes; protecting natural minimum instream flow reservations; and continuing conservation of habitats by reducing grazing in riparian areas.

Trout-perch (*Percopsis omiscomaycus*)

In Montana, trout-perch occur in the South Saskatchewan River basin. Trout-perch are associated with rocky cover, and are not found over sandy or silty substrates. Conservation concerns include: sensitivity to pollution and sedimentation associated with row crop agriculture and channelization; sensitivity to warm water temperatures; and impoundments impeding movement of populations. Conservation strategies include: conserving riparian areas, including increased restrictions of fertilizers and nutrients seeped into waters; surveying in the Belly River and Waterton Lake to establish presence; and managing irrigation and development to improve connectivity of habitat.

Fish

Burbot (*Lota lota*)

Burbot are found in many river and stream drainages in cold, deep lakes and reservoirs. In lakes, they are mostly associated with bedrock and rubble substrates. River requirements are believed to be restricted to backwater areas of cooler, high-altitude systems. Conservation concerns include: overharvest; poorly understood life history traits and habitat requirements; and impoundments on river systems. Conservation strategies include: evaluating angler exploitation

rates and determining sustainability of wild populations; increasing surveys to gain basic population characteristics; and working with managing authorities to encourage reservoir management to mimic a natural hydrograph.

Sauger (*Stizostedion canadense*)

Sauger distribution is confined to the mainstem Missouri and small parts of the Marias, Musselshell, and Milk Rivers, and the lower Yellowstone River. Saugers typically occur in large turbid rivers and shallow turbid lakes. Conservation concerns include: water withdrawals resulting in low river flows; reservoir operation that alters the natural hydrograph; and barriers

that negatively influence spawning patterns. Conservation strategies include: minimizing the diversion of water from river channels by channelization and stream-bank armoring; regulating flow releases from dams; and installing fish screens and return structures to minimize entrapment of fish in irrigation canals (Nelson 1968; Walburg 1972).

Montana's Fish Species

All living things depend on water but no other vertebrate can tell us more about the quality of our water than fish. At least 90 fish species can be found in Montana's lakes, streams and rivers.

Amphibians

Coeur d'Alene Salamander (*Plethodon idahoensis*)

In Montana, the Coeur d'Alene salamander is known from about 45 locations in five northwestern counties. It is found in three major types of habitat: springs or seeps; spray zones of waterfalls; and edges of streams. Conservation concerns include: disturbances, such as timber harvest, fire, road and trail construction, and water diversion projects; pollution; and restricted mobility coupled with increasing habitat fragmentation. Conservation strategies include: fencing known salamander sites to exclude livestock; not applying chemicals (herbicides, pesticides, fertilizers etc.) within 300 feet of water bodies or wetlands; and protecting and conserving habitat by regulating development, logging, and chemical applications.

Western Toad (*Bufo boreas*)

The western toad is found throughout the mountains and intermountain valleys of western Montana on both sides of the Continental Divide. Habitats include low-elevation riparian and marshy areas to high-elevation ponds and fens. Conservation concerns include: breeding site destruction; diseases such as red-leg disease and chytrid fungus; and increased predation by species attracted to human disturbance. Conservation strategies include: surveying wetlands suitable for western toads and protecting certain wetlands from introduced species and human disturbance; preventing spread of chytrid fungus. [Personnel working at sites should thoroughly rinse and decontaminate all equipment as described in Maxell et al., 2004.]; and avoiding stocking of predatory game fish at sites lacking them.

Northern Leopard Frog (*Rana pipiens*)

The northern leopard frog is found across the prairie regions of eastern Montana. In recent years, it has been documented at only isolated sites west of the Continental Divide. Habitats used by northern leopard frog include low-elevation riparian and marshy areas. Conservation concerns include: loss of wetlands and hydrological regimes to drought; introduction of game fish, mosquitofish and bullfrogs; and pathogens, including chytrid fungus. Conservation strategies include: developing habitat conservation and improvement projects including protecting breeding sites from livestock impacts; allowing no introduction of game fish or bullfrogs into waters with known breeding; and preventing spread of chytrid fungus. [Personnel working at sites should thoroughly rinse and decontaminate all equipment as described in Maxell et al., 2004.]

REPTILES

Reptiles

Snapping Turtle (*Chelydra serpentina*)

In Montana, snapping turtle are present east of the Continental Divide, mostly in the Yellowstone River system and tributaries, especially the Tongue River drainage. Snapping turtles have been observed in backwaters along major rivers, at smaller reservoirs, and in smaller streams and creeks with permanent flowing water and sandy or muddy bottoms. Conservation concerns include: nest destruction and predation; human harvest of long-lived adults; and habitat loss and degradation, including

barriers that hamper movement of snapping turtles. Conservation strategies include: conserving nest areas; reviewing harvest limits; and conserving major rivers systems in Montana, including riparian habitats.

Spiny Softshell (*Apalone spinifera*)

In Montana, spiny softshell are present east of the Continental Divide in the Missouri River and Yellowstone River drainages, and some of the principle tributaries. Spiny softshells occupy larger rivers and tributaries, but can also occur in lakes, ponds, rivers, pools along intermittent streams, irrigation canals, and oxbows. Conservation concerns include: habitat loss and degradation, including barriers that hamper movement of spiny softshells; nest disturbance; and incidental take from anglers. Conservation strategies include: conserving major rivers in Montana; considering a management plan for the spiny softshell or including it in another comprehensive taxonomic plan; protecting nest sites from human disturbance; and thoroughly documenting observations and incidental take.

Western Hog-nosed Snake (*Heterodon nasicus*)

In Montana, the western hog-nosed snake is found east of the Continental Divide throughout the prairies. However, significant gaps in the known distribution remain. Little specific information for the state is available for habitat preference. Conservation concerns include: the poorly understood distribution and status; pet trade industry; and declines in prey (amphibians). Conservation strategies include: considering management plan for the western hog-nosed snake or including it in another comprehensive taxonomic plan; increasing education and information on reptile biology and awareness of the importance of den and nest sites; and targeting surveys (specific to both hog-nosed snakes and prey base) in suitable habitat to continue determining abundance and range in Montana.

Milksnake (*Lampropeltis triangulum*)

In Montana, the milk-snake is found east of the Continental Divide throughout much of the prairie regions, although more observations have been reported in southeast Montana. Little specific information is available on habitat preferences. Conservation concerns include: poorly understood distribution, status, and biology; and declining numbers due to the pet trade industry. Conservation strategies include: considering management plan for the milksnake or including it in another comprehensive taxonomic plan; targeting surveys (specific to the milksnake) in suitable habitat to continue determining its range in Montana; and increasing education and information on reptile biology and awareness of the importance of den and nest sites.

Smooth Greensnake (*Opheodrys vernalis*)

The smooth greensnake is restricted to extreme northeastern Montana north of the Missouri River, at elevations below 2150 feet (655 meters). Little habitat information is available for the species in Montana. Conservation concerns include: poorly understood distribution, status, and biology in Montana. Conservation strategies include: considering a management plan for the smooth greensnakes or including it in another comprehensive taxonomic plan; targeting surveys (specific to the smooth greensnake) in suitable habitat to continue determining its range in Montana; recording all observation of this species to continue establishing its range in Montana; and conserving habitats where smooth greensnake occur.

MONTANA'S 18 REPTILE SPECIES

Montana's 18 reptile species represent a valuable biological and cultural resource. Reptiles, such as the gartersnakes and turtles encountered near many wetlands, have provided many people with their earliest memories of appreciating wildlife.

BIRDS

Common Loon (*Gavia immer*)

In Montana, the loon breeding range is primarily restricted to low elevation glacial lakes in the northwest corner of the state. Successful nesting requires both nesting sites and nursery areas. Conservation concerns include: disturbances to loon nesting and foraging lakes by human activities such as boating or angling; loss of connectivity within Montana's populations as well as with other western populations; and loss of nesting habitat due to development, water level alterations and recreation. Conservation strategies include: implementing a territorial ranking system to identify priority nesting lakes; connecting population demographics and trend information for breeding sites and migratory routes; maintaining the suitability of currently used nesting territories; and creating site-specific management plans.

Trumpeter Swan (*Cygnus buccinator*)

The breeding range of trumpeter swans in Montana is restricted to southwest Montana and along the Rocky Mountain Front. The non-breeding range is limited to Beaverhead, Gallatin, and Madison counties. Habitat in Montana includes lakes, ponds and adjacent marshes containing sufficient vegetation and nesting locations. Conservation concerns include: isolation of breeding populations; wetland degradation and destruction; and lack of information on breeding success. Conservation strategies include: protecting known nesting habitat and managing nesting habitat in a manner compatible with increasing swan production and connectivity between populations; restoring wetland; and continuing surveying and monitoring of populations.

Harlequin Duck (*Histrionicus histrionicus*)

The Harlequin duck range is found mainly in northwestern Montana and the Greater Yellowstone Ecosystem. Harlequin ducks inhabit fast moving, low gradient, clear mountain streams. Conservation concerns include: range and forest management practices; human disturbance during breeding season; and water pollution on headwater streams utilized for nesting, brood rearing and prey base. Conservation strategies include: managing grazing to preserve riparian vegetation and streambank stability; decreasing human disturbance such as boating, hiking and camping during breeding season; and working with cooperators and public to identify and reduce point source pollution in headwater streams.

Bald Eagle (*Haliaeetus leucocephalus*)

The majority of eagles are found in western Montana, although breeding pairs may be found along major rivers and lakes including the Yellowstone and Missouri Rivers through prairie lands. The bald eagle is primarily a species of riparian and lacustrine habitats, especially during the breeding season. Conservation concerns include: maintaining forest stands for nesting, roosting and foraging; sensitivity to human disturbance particularly to fledglings; and contaminants (lead, residual pesticides). Conservation strategies include: monitoring and surveying for breeding pairs and locations of nests; minimizing disturbance during nesting season; and enforcing regulations addressing pollution in waterways.

Greater Sage-Grouse (*Centrocercus urophasianus*)

Distribution of greater sage-grouse includes the eastern one-half and southwest corner of Montana. Greater sage-grouse require the naturally occurring patchwork of sagebrush communities to meet survival and reproduction needs. Conservation concerns include: conversion of native sagebrush grassland to cropland, nonnative pasture or residential development; fragmentation of sagebrush grasslands (e.g., structural developments, roads, urban sprawl); and vulnerability to West Nile virus. Conservation strategies include: promoting conservation of intact sagebrush grasslands through incentives and easements; utilizing local cooperators to expand greater sage-grouse conservation; quantifying impacts of energy development; and continuing funding and research on associations between West Nile virus and greater sage-grouse populations.

Columbia Sharp-tailed Grouse (*Tympanuchus phasianellus columbianus*)

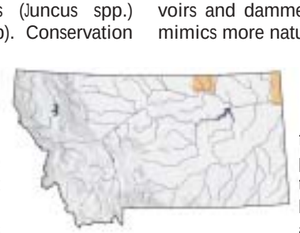
In Montana, there are two known populations, the Tobacco Valley near Eureka, and the Blackfoot Valley, near Helmville. Columbia sharp-tailed grouse are associated with prairie and sagebrush grasslands. Conservation concerns include: isolated and extremely small populations; human disturbance to leks; and conversion of native grassland communities to agriculture. Conservation strategies include: increasing abundance and distribution by re-introduction program into northwest Montana that include the development of a captive rearing program; protecting known lek areas and the surrounding habitats and search for new leks; and cooperating and communicating with land managers and land owners in managing habitat, to include British Columbia.

Birds

Yellow Rail (*Coturnicops noveboracensis*)

The Yellow Rail is thought to occur regularly in the northeastern corner of the state and is rare elsewhere. However there are fewer than 20 known observations in the state. Breeding habitat selection consists of wet sedge (Carex spp.) meadows and other wetlands containing grasses, rushes (Juncus spp.) and bulrushes (Scirpus spp). Conservation concerns include: little known information in Montana; human disturbance of wetland habitats; and water level manipulation at nesting locations. Conservation strategies include: increasing surveying and monitoring projects; conserving wetlands; and managing reservoirs and dammed rivers in a manner that mimics more natural seasonal fluctuations.

Whooping Crane (*Grus americana*)



For the past 20 years, whooping cranes have been observed in northeast Montana, with limited sightings at Red Rock Lakes National Wildlife Refuge (a reintroduction effort to establish a population at Grays Lake, Idaho, which no longer exists). The whooping crane has been observed in the marsh habitat at Medicine Lake and Red Rock Lakes National Wildlife Refuges. Conservation concerns include: habitat degradation and fragmentation to native prairies; human disturbance to nesting locations; and human misidentification as sandhill cranes during hunting season. Conservation strategies include: conserving habitat in northeast Montana (outside Medicine Lake NWR); prohibiting public access to breeding locations, including aircraft and a periodic census to evaluate productivity; and educating hunters.

Piping Plover (*Charadrius melodus*)

The piping plover is generally a species of northern and northeastern Montana. It is known to breed in wetland areas throughout this region. Piping plovers primarily select un-vegetated sand or pebble beaches on shorelines or islands in freshwater and saline wetlands for nesting. Conservation concerns include: destruction and degradation of summer and winter habitat; shoreline erosion; human disturbances of nesting and foraging birds; and predation. Conservation strategies include: protecting as much existing native prairie as feasible, primarily by conservation easements; restoring drained wetlands; increasing nesting substrate when it appears to be a limiting factor affecting use of wetlands; avoiding oil and gas development near wetlands; and directing predator management.

Mountain Plover (*Charadrius montanus*)

Primary breeding habitat of the mountain plover is found in north-central Montana in Phillips, Blaine, and northern Fergus and Petroleum counties. Habitat use in Montana appears similar to other areas within the breeding range. Use of prairie dog colonies and other short-grass prairie sites are confirmed as preferred breeding habitat. Conservation concerns include: invasive non-native plant species; habitat loss of short-grass prairies due to conversion to cropland; and decreases in prairie dog colonies. Conservation strategies include: controlling shrub and noxious weed encroachment at known and potential breeding sites; protecting existing native grassland from conversion to cropland; and continuing to manage and potentially enhance prairie dog colonies.

Long-billed Curlew (*Numenius americanus*)

The long-billed curlew breeds widely throughout Montana, although more commonly east of the Rocky Mountains. Long-billed curlews require short grass, bare-ground components, shade, and abundant invertebrate prey. Conservation concerns include: habitat loss (e.g. sod busting, weed invasion, general conversion of prairie lands); fragmented, unprotected, or mismanaged breeding habitat; and human disturbance to grassland habitats (including impacts of cattle grazing, roads, pesticide application and draining of wetlands). Conservation strategies include: preventing conversion of prairie lands to other land uses; providing large blocks of suitable habitat; and maintaining vertical structure through appropriate management techniques.

Interior Least Tern (*Sterna antillarum athalassos*)

Interior least terns breed along the lower portions of the Missouri River and on the lower Yellowstone River. Interior least terns nest on un-vegetated, sand-pebble beaches and islands of large reservoirs and rivers. Conservation concerns include: human use and bird or mammal predation on adults, juveniles, and eggs; pesticide and heavy metal pollution; and human modification of river flow (e.g., reduction of spring floods by dams), bank stabilization and channelization, resulting in reduced availability of bare island/sandbar nesting habitat. Conservation strategies include: controlling predators; decreasing point and non-point inputs of pesticides and heavy metals into rivers and floodplains; and decreasing human modifications of flows on larger rivers and Fort Peck Reservoir.

Birds

Black Tern (*Chlidonias niger*)

Black terns have been documented breeding in the northern half of Montana. Black tern breeding habitat is mostly wetlands, marshes, prairie potholes, and small ponds. However, several locations are on man-made islands or islands in man-made reservoirs. Conservation concerns include: loss or degradation of wetlands for breeding and migration; pesticide reduction of favored insect foods; and lack of information. Conservation strategies include: incorporating black tern habitats (known and potential) into any wetland restoration programs; reducing nutrient loading from runoff at known black tern nesting sites; and implementing a public education and sighting program, similar to the program for common loon nesting sites; and continuing monitoring at known breeding locations.

Flammulated Owl (*Otus flameolus*)

The range of flammulated owls in Montana is restricted to the western portion of the state, which includes areas east of the continental divide. In Montana, flammulated owls are associated with mature and old growth xeric ponderosa pine/ Douglas-fir stands and in landscapes with higher proportions of suitable forest of low to moderate canopy closure. Conservation concerns include: loss of old-growth forests; inadequate monitoring efforts; and fire suppression. Conservation strategies include: conserving old-growth forests; continuing monitoring efforts to include night monitoring; and considering use of prescribed fire near mature forest stands to reduce understory stocking and enhance the shrub component.

Burrowing Owl (*Speotyto cunicularia*)

Burrowing owls are widely distributed east of the Continental Divide with no records west of the Continental Divide since 1991. Burrowing owls are found in open grasslands, where abandoned burrows dug by mammals such as ground squirrels, prairie dogs and badgers are available. Conservation concerns include: elimination of burrowing mammals that provide critical habitat; habitat loss and fragmentation due to agricultural and urban development; and petroleum exploration and development. Conservation strategies include: continuing maintaining and monitoring of burrowing mammals colonies; developing conservation easements and other conservation practices that recover or protect native prairie grassland areas; and researching impacts of road building and water retention pond construction as they relate to gas and oil development activities.

Black-backed Woodpecker (*Picoides arcticus*)

The state range of the black-backed woodpecker is primarily confined to northwest Montana. Potential breeding records also exist. That would expand their range to most counties in western Montana. The habitat for black-backed woodpeckers is early successional, burned forest of mixed conifer, lodgepole pine, Douglas fir, and spruce-fir. Conservation concerns include: increased timber harvest; fire suppression; and removal of fire-killed or insect-infested trees. Conservation strategies include: working with forest management agencies and companies to promote conservation practices; decreasing fire suppression to allow natural occurrences in isolated areas; and managing "salvage" logging techniques which remove dying and recently killed trees.

Olive-sided Flycatcher (*Contopus cooperi*)

The olive-sided flycatcher breeds throughout mountainous areas of western Montana with unconfirmed reports of breeding in central Montana. They are often associated with post-fire habitat, but may also be found in other forest openings (clear cuts and other disturbed forested habitat), and forest edges. Conservation concerns include: fire suppression management; decreased post-fire snags and large trees; and conversion of forest to urban and residential areas. Conservation strategies include: using prescribed fire, timber harvest, and thinning to change forest composition and structure to restore old open forest conditions; retaining, maintaining and/ or restoring stands of open-canopy mature and older ponderosa pine and cottonwood; practicing selective logging; and retaining forested edge habitat around riparian and wetland features.

Sedge Wren (*Cistothorus platensis*)

The migratory pattern of this species in Montana is poorly known, and few records exist for northeastern Montana. No specific information exists, but appropriate wetland habitat is present in the areas of Montana in which the species has been recorded. Conservation concerns include: lack of information, and human-directed disturbance to wetland habitats (i.e. impacts of cattle grazing, draining, vegetation manipulation, invasion of non-native plant and animal species.). Conservation strategies include: determining breeding status and identifying breeding locations; increasing surveying and monitoring projects; and managing conservation of wetland habitats known to be used by sedge wrens.

Mammals

Nelson's Sharp-tailed Sparrow (*Ammodramus nelsoni*)

Nelson's Sharp-tailed Sparrow has an extremely limited range in Montana. The species has only been observed in eastern Sheridan and northeastern Roosevelt counties. In Montana, this species prefers freshwater wetlands with dense, emergent vegetation or damp areas with dense grasses. Conservation concerns include: lack of monitoring or understanding; high risk of extirpation from the state due to small distribution; wetland destruction; and parasitism by brown-headed cowbird.

Conservation strategies include: increasing monitoring and surveying efforts, especially at breeding sites; protecting areas where species is found; restoring and protecting wetlands; increasing management of grazing regimes that promote healthy habitat; and supporting research to better understand natural relationship between host and parasite.

Montana's more than 400 bird species

Montana boasts more bird species than fish, mammal, and reptile species combined. Each of the more than 400 bird species recorded in the state is adapted to a particular habitat - ranging from alpine mountaintops to riparian river corridors, conifer forests to prairie grasslands. Some birds are only here temporarily during migration or the summer breeding season. Still, there are quite a few that are hardy enough to stay through the winter months. The diversity of bird species in Montana attests to the diversity of our landscape. Keep an eye out for our state's rich bird life, including a number of rare species. Unlike many other wild animals, birds regularly advertise their presence with song, color and movement.

Spotted Bat (*Euderma maculatum*)

Spotted bats appear to be restricted to areas east of the Continental Divide in south-central Montana. However, the full extent of the range in Montana is unknown. Spotted bats have been detected most often in open arid habitats dominated by Utah juniper and sagebrush. Cliffs, rocky outcrops, and water are other attributes of sites where spotted bats occur. Conservation concerns include: hazardous, standing water bodies associated with oil and gas fields; riparian degradation that could affect sustainable prey (moths) populations; and lack of information due to difficulty of surveying. Conservation strategies include: protecting water sources in arid regions; conserving riparian areas in arid regions; completing the Montana Bat Management Plan; and increasing monitoring and surveying.

Townsend's Big-eared Bat (*Corynorhinus townsendii*)

The Townsend's big-eared bat has been found in almost every part of Montana. Caves and abandoned mines are used for maternity roosts and hibernacula. Habitats in the vicinity of roosts include fir and pine, sagebrush scrub, and cottonwood bottomland. Conservation concerns include: vandalism to maternity colonies and hibernacula; abandoned mine closures; and degradation or loss of native riparian vegetation. Conservation strategies include: identifying maternity colonies and hibernacula; closing of caves and mines to recreationalists; installing bat-friendly gates to coal mines instead of closure; and maintaining or improving the condition of riparian vegetation in bat foraging areas.

Pallid Bat (*Antrozous pallidus*)

The distribution in Montana is not yet well defined, but several pallid bats have been captured east of the Continental Divide in south-central Montana. Habitat includes Utah juniper-black sagebrush, ponderosa pine, savannah and big sagebrush. Conservation concerns include: closure of mines for reclamation; lack of information on distribution, population, and requirements; oil and gas fields disturbing water sources; and roost disturbance. Conservation strategies include: installing new entrance barriers that allow free passage of bats; completing the Montana Bat Management Plan; increasing surveying and monitoring techniques; protecting water sources in arid regions; and protecting of roost sites.

Mammals

Pygmy Rabbit (*Brachylagus idahoensis*)

The range of pygmy rabbit in Montana is confined to the Southwest arid basin. Occupied habitats in Montana include shrub-grasslands on alluvial fans, floodplains, plateaus, high mountain valleys, and mountain slopes where suitable sagebrush cover and soils for burrowing are available. Conservation concerns include: loss of sagebrush habitat due to range management practices; fragmentation of available habitat; and the fact that the pygmy rabbit is a habitat specialist on all scales. Conservation strategies include: considering a management plan for the pygmy rabbit or including in another comprehensive taxonomic plan; resting and rotating livestock; coordinating efforts with federal agencies including BLM and USFS; and protecting sagebrush on a large scale.

Hoary Marmot (*Marmota caligata*)

Hoary marmots are found through coniferous forests in northwest Montana, including small, scattered, isolated populations south of the Mission Mountains. Habitat needs include rocky outcroppings and large boulder fields in high subalpine and alpine regions. Conservation concerns include: lack of data on Montana populations; little or no connectivity between populations in distinct mountain ranges; and change in climate patterns, potentially from global warming. Conservation strategies include: examining the feasibility of transplanting individuals between populations to increase genetic diversity; conserving small populations found on the periphery of their distribution; and conducting inventory and monitoring programs to establish long-term trends of abundance and distribution of populations.

Black-tailed Prairie Dog (*Cynomys ludovicianus*)

Black-tailed prairie dogs are found across most of eastern Montana. Prairie dog colonies are found on flat, open grasslands and shrub/grasslands with relatively sparse vegetation. Conservation concerns include: conversion of native rangelands to agriculture and residential development; conflicts between the present abundance of prairie dogs and other land uses; disease, particularly sylvatic plague; and poisoning as a governmental control program. Conservation strategies include: instituting a landowner incentive program and a prairie dog control program designed to manage prairie dog acreage; identifying isolated colonies and applying management measures to maintain current distribution; assisting in funding research projects targeting disease; and developing and implementing a prairie dog ecosystem education program.

White-tailed prairie dogs inhabit a small area in the south-central portion of Montana, near the Pryor Mountains. White-tailed prairie dogs inhabit xeric sites with mixed stands of shrubs and grasses. Conservation concerns include: conversion of native rangelands to agriculture and residential development; disease, particularly sylvatic plague; and vulnerability of remaining small and isolated colonies to extirpation. Conservation strategies include: instituting a landowner incentive program and a prairie dog control program designed to manage prairie dog acreage; assisting in funding research projects targeting effects of disease; and translocating white-tailed prairie dogs from colonies in the path of a highway project to a formerly occupied site on BLM land.

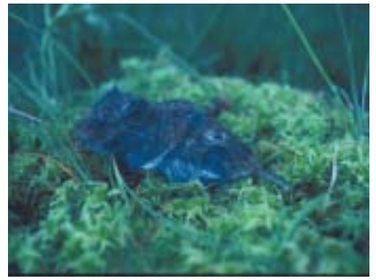
White-tailed Prairie Dog (*Cynomys leucurus*)

The Great basin pocket mouse is restricted in Montana to the extreme southwestern portion of the state. Occupied habitats are arid and sometimes sparsely vegetated. Conservation concerns include: competition for grasses (livestock probably compete with pocket mice for grasses and reduce shrub and grass cover); habitat loss by large-scale removal of sagebrush; and lack of biological information. Conservation strategies include: managing land to maintain a mosaic of sagebrush cover, size, and age classes, especially if it promotes the growth of grasses and forbs within sagebrush stands; rotating livestock areas; and considering a management plan for the great basin pocket mouse or including it in another comprehensive taxonomic plan.

Great Basin Pocket Mouse (*Perognathus parvus*)

In Montana, the northern bog lemming has been documented at 18 isolated sites, mainly west of the Continental Divide. Northern bog lemmings often occur in wet meadows, fens, or bog-like environments. Conservation concerns include: timber harvest around bog/fen habitats; range management practices, including exotic plant invasion to fens; and poorly understood distribution. Conservation strategies include: working with cooperators to limit timber harvest to beyond a 100 meter buffer surrounding sphagnum, other fen moss mats, or associated riparian areas which could provide corridors for dispersal; minimizing livestock grazing in drainages with unsurveyed moss mats; and considering a management plan for the northern bog lemming or including it in another comprehensive taxonomic plan.

Northern Bog Lemming (*Synaptomys borealis*)



Mammals

Meadow Jumping Mouse (*Zapus hudsonius*)

Meadow jumping mice are found in southeastern counties from the Missouri River/Yellowstone River confluence to the Powder and Tongue Rivers. Meadow jumping mice have been found in dense and lush grass in marshy areas, riparian areas and woody draws. Conservation concerns include: destruction of natural springs/seeps for livestock, and wetland conversion; lack of knowledge regarding immediate and long-term impacts of grazing; and lack of biological information. Conservation strategies include: increasing management and protection of springs and seeps within range; considering a management plan for the meadow jumping mouse or including it in another comprehensive taxonomic plan; and standardizing surveys to obtain biological information of populations.

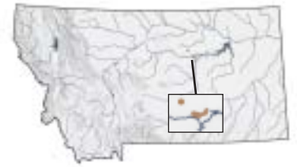
Gray Wolf (*Canis lupus*)

Since the 1995 reintroduction efforts, gray wolves have re-colonated many areas of western Montana and are expanding their range into new regions including the Bitterroot, Gravellys and Absaroka-Beartooths. The gray wolf exhibits no particular habitat preference. Conservation concerns include: variable public tolerance; human-caused mortality (illegal shooting, conflicts with livestock, misidentification, vehicle or train strikes); and disease. Conservation strategies include: assisting private landowners to decrease potential for negative livestock-wolf interactions; using public outreach to increase awareness of wolf biology, conservation, and management; adapting management dynamically with the status of wolf population and distribution; and monitoring populations through blood sampling to identify potential diseases.

Grizzly Bear (*Ursus arctos horribilis*)

Grizzlies occur in northwest Montana, coming down east off the Rocky Mountain Front, and in Yellowstone National Park with individuals moving into the Gallatin and Custer National Forests. Grizzlies primarily use mixed grass/shrub meadows, riparian zones, closed and open timber, and alpine habitats. Conservation concerns include: human-bear and bear-livestock interactions; habitat loss, degradation and fragmentation; and genetic fragmentation among populations. Conservation strategies include: developing proactive management utilizing Montana citizens; continuing interagency management efforts; protecting critical habitats through easements and other methods; and continuing research projects, including genetic analysis.

Black-footed Ferret (*Mustela nigripes*)



Only reintroduced populations of black-footed ferrets are currently present. They once ranged throughout much of eastern Montana. Black-footed ferrets are intimately tied to prairie dogs and are limited to the habitat that they use (grasslands, steppe, and shrub steppe). Conservation concerns include: reduction of habitat; declining prey base (prairie dogs); disease, such as canine distemper; and failure of reintroduction efforts. Conservation strategies include: supporting strategic conservation easements by organizations and public agencies; working through cooperative agreements to manage for healthy populations of prairie dogs; continuing monitoring diseases that impact the health of populations; and continuing to support future reintroduction efforts that include the adaptive management paradigm.

Canada Lynx (*Felis lynx*)

Canada lynx are mainly found in the mountains of western Montana. Canada lynx west of the Continental Divide generally occur in subalpine forests in stands composed of either lodgepole pine or stands of coniferous and deciduous hardwoods. Conservation concerns include: conifer habitat loss and destruction; competition with other predators that can survive in today's more fragmented landscape; and road construction decreasing connectivity and movement, and increasing potential for human disturbance. Conservation strategies include: developing adequate management strategies between agencies to protect dense tree stands; maintaining natural mosaic of forest by allowing low to medium level fires; and conserving contiguous tracks of habitat by working with agencies to manage for road construction and development.

American Bison (*Bos bison*)

Free-ranging American bison in Montana are located only in areas surrounding Yellowstone National Park. Another semi-wild population occurs at the National Bison Range in northwestern Montana. Throughout their range, American bison inhabit open plains and grasslands. Conservation concerns include: control issues for bison moving in and out of Yellowstone National Park; disease (Brucellosis); and bison being ecologically extinct with a very reduced range of free-roaming herds. Conservation strategies include: continuing development of working relationships with landowners; controlling brucellosis; and establishing free-ranging, disease-free populations in habitats outside Yellowstone National Park where they can function ecologically to restore grassland systems.

Component IV

Inventory

Species in Greatest Need of Inventory

Inventory

Species in Greatest Need of Inventory

Over 600 vertebrate fish and wildlife species either live in or migrate through Montana. Because hunters and anglers have historically funded statewide management efforts, the most information exists for the 80 or so animals that are fished or hunted. Although efforts have increased in recent years to pay more attention to all species, there are still many animals that have inadequate, poor quality, or outdated information concerning their current numbers and distributions.

Many of the following species and groups of species lack the information biologists and managers need to make good decisions about which animals need more resources directed their way in order to conserve them or the habitats they depend on. Over time, collecting information on these animals will benefit fish and wildlife conservation by 1) allowing biologists and managers to have the information necessary to determine the level of conservation need for all species, 2) increasing our understanding about species that are important or indicator species for the health of fish and wildlife communities, and 3) allowing us to help measure the success we are having at conserving our fish and wildlife using a comprehensive approach.

The following species and groups of species have been identified as those in greatest need of inventory.

Inventory (I):

- I^1 Observational data is lacking
- I^2 Observational data is outdated
- I^3 Observational data is of poor quality
- I^4 Statewide inventory needed
- I^5 Localized inventory needed
- I^6 Group/Species require targeted survey efforts
- I^7 Information required to know if a species is a migratory or peripheral species
- I^M Monitoring efforts required

Other (O):

- O^1 Dependant on critical habitats
- O^2 Opportunity exists for law enforcement to assist with inventory

Tier I Species (bold)

23 Species

Groups with Greatest Inventory Needs

Groups	I^1	I^2	I^3	I^4	I^5	I^6	I^7	I^M	O^1	O^2
Invertebrate Group	X			X		X				
Crayfish Group	X			X		X				
Mussels Group	X			X		X				
Fish, Prairie Group	X			X		X				
Reptiles Group	X			X		X				
Shorebirds/Waterbirds Group	X			X		X			X	X
Birds, Nocturnal Group	X			X		X			X	
Mammals, Bats Group	X			X		X				
Mammals, Small Group	X			X		X				

Species with Greatest Inventory Needs

Species	I^1	I^2	I^3	I^4	I^5	I^6	I^7	I^M	O^1	O^2
Calico Crayfish	X			X		X		X		X
Virile Crayfish	X			X		X		X		X
A Crayfish	X			X		X		X		X
Signal Crayfish	X			X		X		X		X
Black Sandshell	X			X						
Western Pearlshell	X			X						
Torrent Sculpin	X			X						
Spoonhead Sculpin	X			X						
Shortnose Gar	X				X					
Lake Trout (native lakes)	X					X		X		X
Western Silvery Minnow	X			X		X		X		
Brassy Minnow	X			X		X		X		
Plains Minnow	X			X		X		X		
Pearl Dace	X			X						
Trout-perch	X			X						
Iowa Darter	X			X						
Coeur d' Alene Salamander	X								X	X
Plains Spadefoot	X				X					X
Western Toad								X		
Great Plains Toad	X								X	X

Species	I^1	I^2	I^3	I^4	I^5	I^6	I^7	I^M	O^1	O^2
Northern Leopard Frog								X		
Snapping Turtle	X			X		X		X		
Spiny Softshell	X			X		X		X		
Northern Alligator Lizard	X			X		X		X		
Western Skink	X			X		X		X		
Rubber Boa	X			X		X		X		
Western Hog-nosed Snake	X			X		X		X		
Milksnake	X			X		X		X	X	
Smooth Greensnake	X				X	X	X			
American Bittern	X			X					X	
Black-crowned Night-heron	X			X					X	
White-faced Ibis	X			X					X	
Northern Goshawk	X				X		X			
Columbia Sharp-tailed Grouse	X				X		X		X	
Yellow Rail	X			X			X			
Greater Yellowlegs	X			X			X			
Solitary Sandpiper	X			X			X			
Semipalmated Sandpiper	X			X			X			
Western Sandpiper	X			X			X			
Least Sandpiper	X			X			X			
Baird's Sandpiper	X			X			X			
Pectoral Sandpiper	X			X			X			
Dunlin	X			X			X			
Long-billed Dowitcher	X			X			X			
Arctic Tern	X			X			X			
Black-billed Cuckoo	X			X					X	
Yellow-billed Cuckoo	X			X			X		X	
Barn Owl	X			X			X		X	
Northern Hawk Owl	X			X		X				X
Common Nighthawk	X			X		X		X		X
Common Poorwill	X			X		X		X		
Black Swift	X				X	X		X	X	
Chimney Swift	X			X		X			X	
White-throated Swift	X			X		X		X		
Black-chinned Hummingbird	X			X					X	
Alder Flycatcher	X			X		X		X		

Species	I^1	I^2	I^3	I^4	I^5	I^6	I^7	I^M	O^1	O^2
Purple Martin	X			X		X	X			
Canyon Wren	X			X		X		X	X	
Sedge Wren	X			X			X			
American Dipper	X	X		X		X		X		
Blue-gray Gnatcatcher	X				X	X	X			
Eastern Bluebird	X			X			X			
Western Bluebird	X			X		X		X		
Black-and-white Warbler	X			X		X		X	X	
Indigo Bunting	X			X		X		X	X	
Green-tailed Towhee	X			X		X		X	X	
Field Sparrow	X				X	X	X	X		
Le Conte's Sparrow	X			X			X			
Nelson's Sharp-tailed Sparrow	X			X			X			
Black Rosy-finch	X			X			X			
Arctic Shrew	X				X		X			
Northern Myotis	X			X			X			
Eastern Red Bat	X			X			X			
Spotted Bat	X			X		X		X		
Townsend's Big-eared Bat	X			X		X		X	X	
Pallid Bat	X			X			X			
American Pika	X			X		X		X	X	
Eastern Cottontail	X			X			X			
Black-tailed Jackrabbit	X				X	X		X		
Uinta Chipmunk	X				X	X				
Hoary Marmot	X				X	X		X	X	
Uinta Ground Squirrel	X				X	X		X		
Wyoming Ground Squirrel	X				X	X		X		
Northern Flying Squirrel	X				X	X		X		
Idaho Pocket Gopher	X				X	X		X		
Hispid Pocket Mouse	X				X		X			
Water Vole	X			X		X		X		
Sagebrush Vole	X			X		X		X		
Northern Bog Lemming	X				X	X		X	X	
Meadow Jumping Mouse	X			X		X		X		
Common Porcupine	X	X		X		X		X		X
Western Spotted Skunk	X			X			X		X	X

Photo Citations

Page #	Description	Photographer
Cover	Blackfeet Indian Reservation	Carl Heilman
	Component I: Focus Areas	
8-9	Montana's Focus Areas Panorama (Bitterroot Range, Bitterroot National Forest)	Carl Heilman
10-11, 12-13, 14-15, 16-17, 18-19, 20-21, 22-23, 24	Intermountain Grassland Panorama (Red Rock Lakes NWR)	Carl Heilman
10	Bitterroot/Frenchtown Valleys	Carl Heilman
10	Riparian Western Conifer	Andrew Jakes
10	Species: See Component III	
11	Central Montana Broad Valleys	Townsend, MT Chamber of Commerce
11	Grassland Complexes	FWP Small Mammal Crew 2004
11	Species: See Component III	
12	Deerlodge Valley	Andrew Jakes
12	Mixed Shrub/Grass Associations	Jeff Henry
12	Species: See Component III	
13	Flathead River Valley	Carl Heilman
13	Wetland: Flathead Lake	Carl Heilman
13	Species: See Component III	
14	Little Belt Foothills	Andrew Jakes
14	Grassland Complexes	Andrew Jakes
14	Species: See Component III	
15	North Tobacco Root Mountains and Foothills	Carl Heilman
15	Grassland Complexes	FWP Small Mammal Crew 2004
15	Species: See Component III	
16	Rocky Mountain Front Foothills	Carl Heilman
16	Mixed Broadleaf Forest: Aspen Gallery	Carl Heilman
16	Species: See Component III	
17	South Elkhorn Mountains	Andrew Jakes
17	Sagebrush	FWP Small Mammal Crew 2004
17	Species: See Component III	
18	Southwest Montana Intermontane Basins and Valleys	Andrew Jakes
18	Sagebrush	Andrew Jakes
18	Species: See Component III	
19	Upper Yellowstone Valley	Jeff Henry
19	Grassland Complexes	FWP Small Mammal Crew 2004
19	Species: See Component III	
20	Big Hole River	Mike Sample
20	Species: See Component III	
21	Bitterroot River	FWP Archives
21	Species: See Component III	
22	Blackfoot River	Mike Sample
22	Species: See Component III	
23	Jefferson River	Andrew Jakes

Photo Citations

Page #	Description	Photographer
23	Species: See Component III	
24	Upper Yellowstone River	FWP Archives
24	Species: See Component III	
25, 26-27	Montane Forest Panorama (Kootenai National Forest)	Carl Heilman
25	Mission/Swan Valley and Mountains	Mike Sample
25	Species: See Component III	
26	Lower Clark Fork	FWP Archives
26	Species: See Component III	
27	Middle Clark Fork	FWP Archives
27	Species: See Component III	
28-29, 30-31, 32-33	Plains Grassland & Forest Panorama (Northwestern Great Plains)	Carl Heilman
28	Missouri Coteau	FWP Small Mammal Crew 2005
28	Wetland	FWP Small Mammal Crew 2005
28	Species: See Component III	
29	Montana Sedimentary Plains	Mike Sample
29	Grassland Complexes	FWP Small Mammal Crew 2004
29	Species: See Component III	
30	Lower Missouri River	FWP Small Mammal Crew 2005
30	Species: See Component III	
31	Lower Yellowstone River	Mike Sample
31	Species: See Component III	
32	Powder River	Mike Sample
32	Species: See Component III	
33	Tongue River	Carl Heilman
33	Species: See Component III	
34-35, 36-37, 38-39	Shrub Grassland Panorama (Custer National Forest)	Carl Heilman
34	Bighorn Intermontane Basin	Mike Sample
34	Mixed Shrub/Grass Associations	FWP Small Mammal Crew 2004
34	Species: See Component III	
35	Montana Glaciated Plains	Carl Heilman
35	Grassland Complexes: Yucca	FWP Small Mammal Crew 2004
35	Species: See Component III	
36	Montana Shale Plains	Steve Carson
36	Sagebrush	FWP Small Mammal Crew 2004
36	Species: See Component III	
37	Powder River Basin/Breaks/Scoria Hills	Jeff Henry
37	Mixed Shrub/Grass Associations	Bob Harrington
37	Species: See Component III	
38	Shale Scablands	Scott Hemmer
38	Sagebrush	FWP Small Mammal Crew 2004
38	Species: See Component III	
39	Middle Missouri River	Mike Sample
39	Species: See Component III	

Component II: Community Types

Page #	Description	Photographer
42-43	Grassland Complexes Panorama	FWP Small Mammal Crew 2005
42	Long-billed Curlew: See Component III	
42	Pronghorn	FWP Archives
42	Canada Goose	Kristi DuBois
42	Grizzly Bear: See Component III	
42	Blue Grama	Larry Allain @USDA-NRCS PLANTS Database
42	Missouri Goldenrod	J.S. Peterson @USDA-NRCS PLANTS Database
42	Needle & Thread Grass	W.L.Wagner @USDA-NRCS PLANTS Database
43	Prairie June Grass	Larry Allain @USDA-NRCS PLANTS Database
43	Prickly Pear Cactus	Adam Messer
43	Silvery Lupine	Thomas G. Barnes @USDA-NRCS PLANTS Database
44-45	Mixed Broadleaf Forest Panorama (Tongue River)	Carl Heilman
44	Elk	FWP Archives
44	Moose	FWP Archives
44	American Beaver	FWP Archives
44	American Dipper	John C. Carlson
44	Buffaloberry	USDA-NRCS PLANTS Database/ Herman, D.E. et al. 1996. North Dakota tree handbook. USDA NRCS ND State Soil Conservation Committee; NDSU Extension & Western Area Power Admin., Bismarck, ND.
44	Cottonwood	FWP Small Mammal Crew 2005
44	Green Ash	USDA-NRCS PLANTS Database/ Herman, D.E. et al. 1996. North Dakota tree handbook. USDA NRCS ND State Soil Conservation Committee; NDSU Extension & Western Area Power Admin., Bismarck, ND.
45	Paper Birch	USDA-NRCS (See above listing)

Page #	Description	Photographer
45	Quaking Aspen	Carl Heilman
45	Thimble Berry	Thomas G. Barnes @USDA-NRCS PLANTS Database
46-47	Mixed Shrub/Grass Associations Panorama (Wyoming Basin)	Carl Heilman
46	Black-tailed Prairie Dog: See Component III	
46	Sagebrush Lizard	FWP Archives
46	Ferruginous Hawk	MTNHP Archives
46	Desert Cottontail	Steve Carson
46	Four-wing Shadscale	Gary A. Monroe @ USDA-NRCS PLANTS Database
46	Big Bluestem	Jennifer Anderson @ USDA-NRCS PLANTS Database
46	Idaho Fescue	J.S. Peterson @ USDA-NRCS PLANTS Database
47	Common Snowberry	J.S. Peterson @ USDA-NRCS PLANTS Database
47	Smooth Sumac	USDA-NRCS PLANTS Database/ Herman, D.E. et al. 1996. North Dakota tree handbook. USDA NRCS ND State Soil Conservation Committee; NDSU Extension & Western Area Power Admin., Bismarck, ND.
47	Yucca	Adam Messer
48-49	Riparian & Wetland Panorama (National Bison Refuge)	Carl Heilman
48	Wood Duck	Teaming With Wildlife
48	Painted Turtle	Kristie DuBois
48	Pileated Woodpecker	Laura Erickson
48	Mule Deer	Steve Carson
48	Riparian Western Broadleaf	Andrew Jakes
48	Riparian Western Conifer	Andrew Jakes
48	Riparian Graminoid Forb	Carl Heilman
49	Riparian Eastern Intermittent Shrub	Andrew Jakes
49	Wetland Eastern Pothole	FWP Small Mammal Crew 2004
49	Riparian Western Shrub	Andrew Jakes
50-51	Sagebrush & Salt Flats Panorama (Wyoming Basin)	Carl Heilman
50	Red Fox	FWP Archives
50	Gopher Snake	MTNHP Archives
50	Basin Big Sagebrush	Gary A. Monroe @ USDA-NRCS PLANTS Database

Page #	Description	Photographer
50	Black Sagebrush	Gary A. Monroe @ USDA-NRCS PLANTS Database
51	Mountain Big Sagebrush	Gary A. Monroe @ USDA-NRCS PLANTS Database
51	Wyoming Big Sagebrush	Gary A. Monroe @ USDA-NRCS PLANTS Database
52-53	Mountain Streams Panorama (Gardiner River, Yellowstone National Park)	Carl Heilman
52	Yellowstone Cutthroat Trout: See Component III: Species	
52	Bull Trout: See Component III: Species	
52	Westslope Cutthroat Trout: See Component III: Species	
52	Arctic Grayling: See Component III: Species	
52	Alpine Headwater Stream	Dave Stagliano
52	Forested Stream	Carl Heilman
53	Glacial Stream	Carl Heilman
53	Valley Stream	Dave Stagliano
54-55	Prairie Streams Panorama (Northwestern Glaciated Plains)	Carl Heilman
54	Pearl Dace: See Component III: Species	
54	Fatmucket Freshwater Mussel	Dave Stagliano
54	Fat Head Minnow	FWP Archives
54	Emerald Shiner	FWP Archives
54	Great Plains Intermittent Stream	Dave Stagliano
54	Great Plains Prairie Stream	Dave Stagliano
55	Northern Glaciated Plains Intermittent Stream	Dave Stagliano
55	Northern Glaciated Plains Stream	Dave Stagliano

Component III: Species

Page #	Description	Photographer
Invertebrates		
58 (Also on page 22)	Western Pearlshell	Dan Gustafson
58-59	Missouri River, Charles M. Russell NWR Panorama	Carl Heilman
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Fish:		
59	White Sturgeon	Kootenai Tribe of Idaho
59 (Also on pages 30, 39)	Pallid Sturgeon	NEBRASKAland Magazine/Nebraska Game and Parks Commission
59 (Also on pages 31, 33)	Paddlefish	Shedd Aquarium/ www.fishphotos.org
60-61	Gallatin National Forest, Snow Mountains Panorama	Carl Heilman
60 (Also on page 30)	Shortnose Gar	John White
60 (Also on pages 24, 52)	Yellowstone Cutthroat Trout	Paul F. Updike
60 (Also on pages 21, 26, 27, 52)	Westslope Cutthroat Trout	Paul F. Updike
61	Columbia Basin Redband Trout	FWP Archives
61 (Also on pages 21, 22, 26, 27, 52)	Bull Trout	Jim Mogen USFWS
61 (Also on page 20)	Lake Trout (native lakes)	Konrad Schmidt
62-63	Powder River, Moorhead SRMA Panorama	Carl Heilman
62 (Also on pages 20, 23, 52)	Arctic Grayling	Montana Natural Heritage Program
62 (Also on page 32)	Sturgeon Chub	Bob Bramblett

Page #	Description	Photographer
62 (Also on page 31)	Sicklefin Chub	Paul Gerrity
63 (Also on page 54)	Pearl Dace	Konrad Schmidt
63 (Also on page 39)	Blue Sucker	Konrad Schmidt North Dakota Game & Fish
63	Trout-Perch	Konrad Schmidt
64-65	Gallatin National Forest, Quake Lake Panorama	Carl Heilman
64 (Also on page 23, 33)	Burbot	Konrad Schmidt
64 (Also on page 24, 32)	Sauger	Shedd Aquarium/ www.fishphotos.org
Amphibians:		
65 (Also on page 10)	Coeur D'alene Salamander	Kirwin Werner
65 (Also on pages 11, 12, 15, 18, 25)	Western Toad	MTNHP-Leonard
65 (Also on pages 13, 14, 17, 36, 38)	Northern Leopard Frog	FWP-R. Lott
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66-67	Northwestern Great Plains Panorama	Carl Heilman
66 (Also on pages 28, 37)	Snapping Turtle	Allen Wiederrich
66 (Also on pages 29, 35)	Spiny Softshell	Ryan Rauscher
66 (Also on pages 16, 38)	Western Hog-nosed Snake	Rodney Schlecht
67 (Also on pages 14, 34, 36)	Milksnake	Bryce Maxell
67 (Also on page 28)	Smooth Greensnake	Geoffrey Hammerson
Birds:		
68-69	Northern Rockies, Ninepipe NWR	Carl Heilman
68 (Also on pages 13, 25)	Common Loon	MTNHP (Copied from *MT Outdoors*)
68 (Also on pages 16, 18)	Trumpeter Swan	Adam Messer
68 (Also on pages 10, 12)	Harlequin Duck	MTNHP
69 (Also on pages 12, 15, 17, 19)	Bald Eagle	Chuck Carlson
69 (Also on pages 14, 18, 36, 37, 38, 50)	Greater Sage-Grouse	MTNHP (B. Heidel)
69 (Also on page 13)	Columbian Sharp-tailed Grouse	MTNHP (Terres)
70-71	Powder River, Moorhead SRMA Panorama	Carl Heilman
70 (Also on page 28)	Yellow Rail	© Brian E. Small/ www.briansmallphoto.com
70 (Also on page 28)	Whooping Crane	USFWS
70 (Also on page 35)	Piping Plover	Chuck Carlson
71 (Also on pages 11, 29)	Mountain Plover	Chuck Carlson
71 (Also on pages 11, 16, 34, 42)	Long-billed Curlew	Chuck Carlson
71 (Also on pages 29, 35)	Interior Least Tern	MTNHP (Terres)
72-73	Missouri River Panorama	Carl Heilman
72 (Also on pages 12, 37)	Black Tern	MTNHP (Terres)
72 (Also on pages 10, 15, 16)	Flammulated Owl	Gary Stoltz
72 (Also on pages 14, 35, 38)	Burrowing Owl	Audobon Society
73 (Also on pages 13, 17, 19)	Black-backed Woodpecker	Donald M. Jones
73 (Also on page 25)	Olive-sided Flycatcher	© Brian E. Small/ www.briansmallphoto.com
73 (Also on page 28)	Sedge Wren	Bob Gress
74-75	Bitterroot Range, Bitterroot National Forest Panorama	Carl Heilman
74 (Also on page 28)	Nelson's Sharp-tailed Sparrow	North Dakota Fish & Game Craig Birhle
Mammals:		
75 (Also on pages 34, 37)	Spotted Bat	Merlin Tuttle
75 (Also on pages 12, 15, 17, 38)	Townsend's Big-eared Bat	Kristi DuBois

Photo Citations

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75 (Also on pages 11, 34)	Pallid Bat	Kristi DuBois
76-77	Custer National Forest Panorama	Carl Heilman
76 (Also on pages 18, 50)	Pygmy Rabbit	MTNHP (C. Currier)
76 (Also on page 25)	Hoary Marmot	Steve Carson
76 (Also on pages 14, 29, 36, 37, 46)	Black-tailed Prairie Dog	Andrew Jakes
77 (Also on page 34)	White-tailed Prairie Dog	Bob Gress
77 (Also on page 18)	Great Basin Pocket Mouse	B. Moose Peterson/WRP
77 (Also on pages 10, 25)	Northern Bog Lemming	MTNHP (Reichel)
78-79	Great Plains Panorama	Carl Heilman
78 (Also on page 36)	Meadow Jumping Mouse	Phil Myers animaldiversity.org
78 (Also on pages 13, 17, 19)	Gray Wolf	USFWS
78 (Also on page 10, 16, 19, 42)	Grizzly Bear	Chris Servheen
79 (Also on pages 29, 35)	Black-footed Ferret	Randy Matchett
79 (Also on pages 11,15, 19)	Canada Lynx	RMRS Lynx Study
79	American Bison	FWP Archives

Component IV: Inventory

Page #	Description	Photographer
82	Prairie Stream	FWP Archives
83	Trumpeter Swan Release	CSKT Tribal Wildlife Management Program
83	Prairie Stream Sampling	FWP Archives

Literature Citations

For complete citations, please review the complete* Comprehensive Fish & Wildlife Conservation Plan *found on the CD on the next page of this* Executive Summary*.

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The Complete MT CFWCS CD

Montana's
Comprehensive Fish & Wildlife Conservation Strategy
Technical Document